1. Legal Ad

    Documents: PB LEGAL AD 12-8-15.PDF

2. Agenda

    Documents: PB AGENDA 12-8-15.DOCX

3. Rand Road

    3.I. Rand Road (Report)

        Documents: RAND ROAD (REPORT).PDF

    3.II. Rand Road (Attachments)

        Documents: RAND ROAD - (REPORT ATTACHMENTS).PDF

    3.III. Applicants Submittal 1 Of 2

        Documents: RAND ROAD (APPLICANTS SUBMITTAL) 1 OF 2.PDF

    3.IV. Applicants Submittal 2 Of 2

        Documents: RAND ROAD (APPLICANTS SUBMITTAL) 2 OF 2.PDF

    3.V. Plans 1 Of 4

        Documents: RAND ROAD (PLANS) 1 OF 4.PDF

    3.VI. Plans 2 Of 4

        Documents: RAND ROAD (PLANS) 2 OF 4.PDF

    3.VII. Plans 3 Of 4

        Documents: RAND ROAD (PLANS) 3 OF 4.PDF

    3.VIII. Plans 4 Of 4

        Documents: RAND ROAD (PLANS) 4 OF 4.PDF

4. 802 Ocean Avenue

    4.I. Ocean Ave. - 802 (Report)

        Documents: OCEAN AVE -802 (REPORT).PDF

    4.II. Ocean Ave. - 802 (Report Attachments)

        Documents: OCEAN AVE. - 802 (REPORT ATTACHMENTS).PDF

    4.III. Public Comment

        Documents: OCEAN AVE. - 802 (PUBLIC COMMENT).PDF

    4.IV. Applicants Submittal

        Documents: OCEAN AVE. - 802 (APPLICANTS SUBMITTAL).PDF

    4.V. Plans

Documents: OCEAN AVE. - 802 (PLANS).PDF

5. 101 York Street

5.I. York St. - 101 (Report)

Documents: YORK ST. - 101 (REPORT).PDF

5.II. York St. - 101 (Report Attachments)

Documents: YORK ST. - 101 (REPORT ATTACHMENTS).PDF

5.III. York St. - 101 (Applicants Submittal)

Documents: YORK ST. - 101 (APPLICANTS SUBMITTAL).PDF

5.IV. Public Comment

Documents: YORK ST. - 101 (PUBLIC COMMENT).PDF

5.V. York St. - 101 (Plans)

Documents: YORK ST. - 101(PLANS).PDF

6. 26-32 Thomas Street

6.I. Thomas St. - 26-32 (Report)

Documents: THOMAS ST. - 26-32 (REPORT).PDF

6.II. Thomas St. -26-32 (Report Attachments)

Documents: THOMAS ST. - 26-32 (REPORT ATTACHMENTS).PDF

6.III. Public Comment

Documents: THOMAS ST. - 26-32 (PUBLIC COMMENT)PDF.PDF

6.IV. Public Comment #3

Documents: THOMAS ST. - 26-32 (ADDITIONAL PUBLIC COMMENT).PDF

6.V. Public Comment #4

Documents: THOMAS ST. - 26-32 (PUBLIC COMMENT 4).PDF

6.VI. Applicants Submittal

Documents: THOMAS ST. - 26-32 (APPLICANTS SUBMITTAL).PDF

6.VII. Plans

Documents: THOMAS ST. - 26-32 (PLANS).PDF

LEGAL ADVERTISEMENT
PORTLAND PLANNING BOARD MEETING

The Portland Planning Board will hold a meeting on Tuesday, December 8, 2015, Council Chambers, 2nd Floor, City Hall, 389 Congress Street. **Public comments will be taken at this meeting.**

Afternoon Public Hearing – 4:30 p.m.

i. Level III Subdivision Amendment, City of Portland, Applicant, and Level III Site Plan; Portland Technology Park; Rand Road; Patrons Oxford Insurance Co., Applicant.
(4:30 - 5:30 p.m. estimated time) The Board will hold a public hearing on a proposed amended plat for the Portland Technology Park to modify the alignment of the access road, revise Unitil gas line easement and adjust property boundaries for sites (#5, 6 and 7). The Board will also consider a proposed 2 story office building on site #4 with a total floor area of 19,000 sq. ft. Site improvements include extending the roadway and utilities, creating parking for 70 vehicles, landscaping and installing a stormwater water management system.

Evening Public Hearing – 6:30 p.m.

i. Level III Site Plan and Subdivision; 101 York Street; J.B. Brown & Sons, Applicant.
(6:30 p.m.- 7:30 p.m. estimated time) The Board will hold a public hearing to consider a mixed use development at the corner of York and High Streets. The proposal is for a five story building with 17,000 sq. ft. of commercial space on the first floor and 63 residential units on the upper four floors. The proposal also includes a parking facility with two levels of parking for 207 vehicles and the site is in the Downtown Business B-3 zone.

ii. Level III Site Plan and Subdivision; 26-32 Thomas Street; 32 Thomas Street, LLC., Applicant.
(7:30 -8:30 p.m. estimated time)The Board will hold a public hearing to consider five residential dwelling units in the former Williston-West Parish House. The proposal is for two (2) two-bedroom units and three (3) three-bedroom units with four proposed on-site parking spaces. This proposal does not include any proposals for the use of the sanctuary.

iii. Level III Site Plan; 802 Ocean Avenue; Lenity Architecture, LLC., Applicant.
(8:30 p.m. estimated time) The Board will hold a public hearing on a proposed 4 story, 150 unit congregate care facility with a footprint of 39,869 sq. ft. and a total floor area of 134,646 sq. ft. The proposal includes a total of 102 vehicle parking spaces located in garages and on surface lots.

ELIZABETH BOEPPLE, CHAIR - PORTLAND PLANNING BOARD

CITY OF PORTLAND, MAINE

PLANNING BOARD

Elizabeth Boepple, Chair
Sean Dundon. Vice Chair
Bill Hall
Carol Morrissette
Jack Soley
David Eaton

AGENDA
PORTLAND PLANNING BOARD MEETING

The Portland Planning Board will hold a meeting on Tuesday, December 8, 2015, Council Chambers, 2nd Floor, City Hall, 389 Congress Street. **Public comments will be taken at this meeting.**

AFTERNOON PUBLIC HEARING – 4:30 p.m.

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EVENING PUBLIC HEARING – 6:30 p.m.

1. ROLL CALL AND DECLARATION OF QUORUM

2. COMMUNICATIONS AND REPORTS

3. REPORT OF ATTENDANCE AT THE MEETING HELD ON NOVEMBER 24, 2015:
Workshop and Public Hearing: All members were present.

4. REPORT OF DECISIONS AT THE MEETING HELD ON NOVEMBER 24, 2015:

i. Amendment to Division 29 Housing Replacement Amendments, City of Portland, Applicant.
Dundon moved and Morrissette seconded a motion to recommend the proposed text amendments to Division 29 as amended by the Board. Vote: 6-0

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ii. Level III Amendment; Thompson's Point; Forefront Partners, I, LP, Applicant.
Morrissette moved and Dundon seconded a motion to table this item to the January 12, 2016 Planning Board meeting. Voted: 6-0

ii. Level III Subdivision and Site Plan; 22-28 Tate Street; Tate Street Partnership, LLC., Applicant.
Morrissette moved and Dundon seconded a motion to table this item to the December 15, 2015 Planning Board meeting. Voted: 6-0

5. NEW BUSINESS

i. Level III Site Plan; 802 Ocean Avenue; Lenity Architecture, LLC., Applicant.
(6:30 - 7:30 p.m. estimated time) The Board will hold a public hearing on a proposed 4 story, 150 unit congregate care facility with a footprint of 39,869 sq. ft. and a total floor area of 134,646 sq. ft. The proposal includes a total of 102 vehicle parking spaces located in garages and on surface lots.

ii. Level III Site Plan and Subdivision; 101 York Street; J.B. Brown & Sons, Applicant.
(7:30 p.m. - 8:30 p.m. estimated time) The Board will hold a public hearing to consider a mixed use development at the corner of York and High Streets. The proposal is for a five story building with 17,000 sq. ft. of commercial space on the first floor and 63 residential units on the upper four floors. The proposal also includes a parking facility with two levels of parking for 207 vehicles and the site is in the Downtown Business B-3 zone.

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ELIZABETH BOEPPLE, CHAIR - PORTLAND PLANNING BOARD

PLANNING BOARD REPORT
PORTLAND, MAINE

PORTLAND TECHNOLOGY PARK
AMENDMENT TO SUBDIVISION PLAT AND DEVELOPMENT OF LCE (LOT) #4 FOR OFFICES

Rand Road
Level III Application for Subdivision and Site Plan Review

Project ID # 2015-172 (Subdivision Amendment) and 2015-171 (Site Plan)
CBL: 249-A-001-001
Amendment to Subdivision Plat: City of Portland Economic Development Department, Applicant
Site Plan for Patrons Oxford Insurance Office Building: Patrons Oxford Insurance Co. Applicant

Submitted to:	Prepared by:
Portland Planning Board	Jean Fraser, Planner
Public Hearing Date: December 8th, 2015	Date: December 4th, 2015

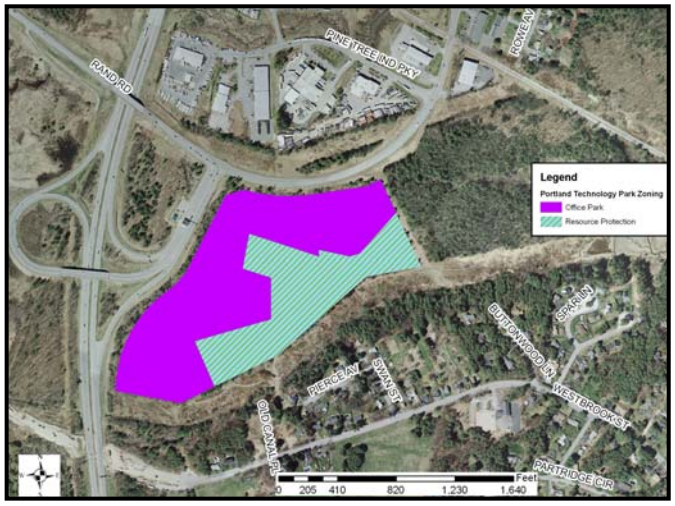
I. INTRODUCTION

Woodard & Curran, on behalf of the applicants, have requested final approval to the Level III Site Plan and Subdivision applications that allow the development of Limited common element (LCE) #4 for a new 19,000 sq ft office development. This is the first building to be constructed in the Portland Technology Park, a 7-lot Office Park proposed by the City of Portland and approved by the Planning Board in January 2012.

The focus of the current proposal is a two-story office building with associated parking, utilities and stormwater infrastructure for the Patrons Oxford Insurance headquarters to be located on Limited Common Element (LCE) #4. The project also includes the realignment and construction of a small section of the phase 2 access drive, with minor adjustments to three LCEs and gravel wetlands in the vicinity.

The proposals constitute revisions to the previous approvals as follows:

- Amendment to the approved Plat to reflect minor adjustments to three LCE boundaries and the alignment of the access drive: application from City of Portland
- Amendment to the approved overall site plan, and revised detailed Site Plan proposals for the LCE #4: application from Patrons Oxford Insurance Company



Office Park Context



2012 Site Plan approved Layout of Office Park
(areas outside green are tree preservation areas)

Required reviews:
The focus of the review is guided by the conditions included in the 2012 Planning Board approval (Attachment 2), as extracted below:

(Subdivision) That the development of limited common element areas is subject to review and approval by the City of Portland Planning Authority for conformance with the Portland Technology Park Design Guidelines and City of Portland Code of Ordinances, Chapter 14 Land Use, Article v. Site Plan for building architecture, site landscaping, site pedestrian circulation, bicycle parking, lamp specifications and signage and any changes or alterations to approved traffic, parking, access, utility, exterior lighting, tree preservation and stormwater features; and

(Site Plan) That when individual units are proposed for site plan review the applicants should submit detailed specifications for snow storage management/protection of gravel wetlands, exterior lamp fixtures (including wall mounted), and consider the opportunity for trail links with the wider trail network on the RPZ open space part of the site; and

(Site Plan) That the site plans for individual units shall be brought before the Planning Board for review and approval, and the Board reserves the right to review individual units under the standards of the site plan ordinance.

The project is also being reviewed by the MDEP and ACOE regarding the amendments to the wetland fill (NRPA) and stormwater management (SLOD).

II. PROJECT DATA:

SUBJECT	*DATA APPROVED OVERALL PARK*	*DATA AMENDED OVERALL PARK*	*DATA LCE#4 AS APPROVED*	*DATA LCE#4 AS REVISED*
Existing Zoning	Office Park			
Existing Use	No building construction to date except access drive and stormwater infrastructure			
Proposed Use	Construction of new building for offices with associated infrastructure			
Parcel Size	OP: 26.2 acres	OP: 26.2 acres	LCE #4: 1.46 acres	LCE#4: 2.28 acres
Impervious Surface Area** **--Existing** **- Proposed** **--Net Change**	9.1 acres	9.31 acres	0 sq. ft. 51,700 sq. ft. 51,700 sq. ft. (1.19 acre)	7,200 sq. ft. 60,400 sq. ft. 67,600 sq. ft. (1.55 acre)
Total Disturbed Area	13.0 acres	13.7 acres	73,500 sq. ft.	94,900 sq. ft.
Total Building Footprint	81,000 sq. ft.	80,500 sq. ft.	10,000 sq. ft.	9,500 sq. ft.
Total Building Floor Area	122,000 sq. ft. (4 @10,000, 2@20,000, and 1 at 42,000 sq. ft.)	121,000 sq. ft. (4@10,000, 1@19,000, 1@20,000, and 1@42,000 sq. ft.)	20,000 sq. ft.	19,000 sq. ft.
Parking Spaces(#handicapped)	436 spaces	428 spaces	78 spaces	70 spaces (3)
Bicycle parking Spaces Proposed	N/A	N/A	N/A	10
Estimated cost of the prj.	N/A	N/A	N/A	$5 million

*****This shows an increase of 0.36 acres, vs. the total technology park increase of 0.21 acres. There was a decrease in impervious surface in LCE 5 (shortened driveway, and an eliminated gravel wetland) that counters the increase in LCE 4.

** These figures include gravel wetlands as impervious as this is how the MDEP views them.

III. WORKSHOP SUMMARY AND PUBLIC COMMENT

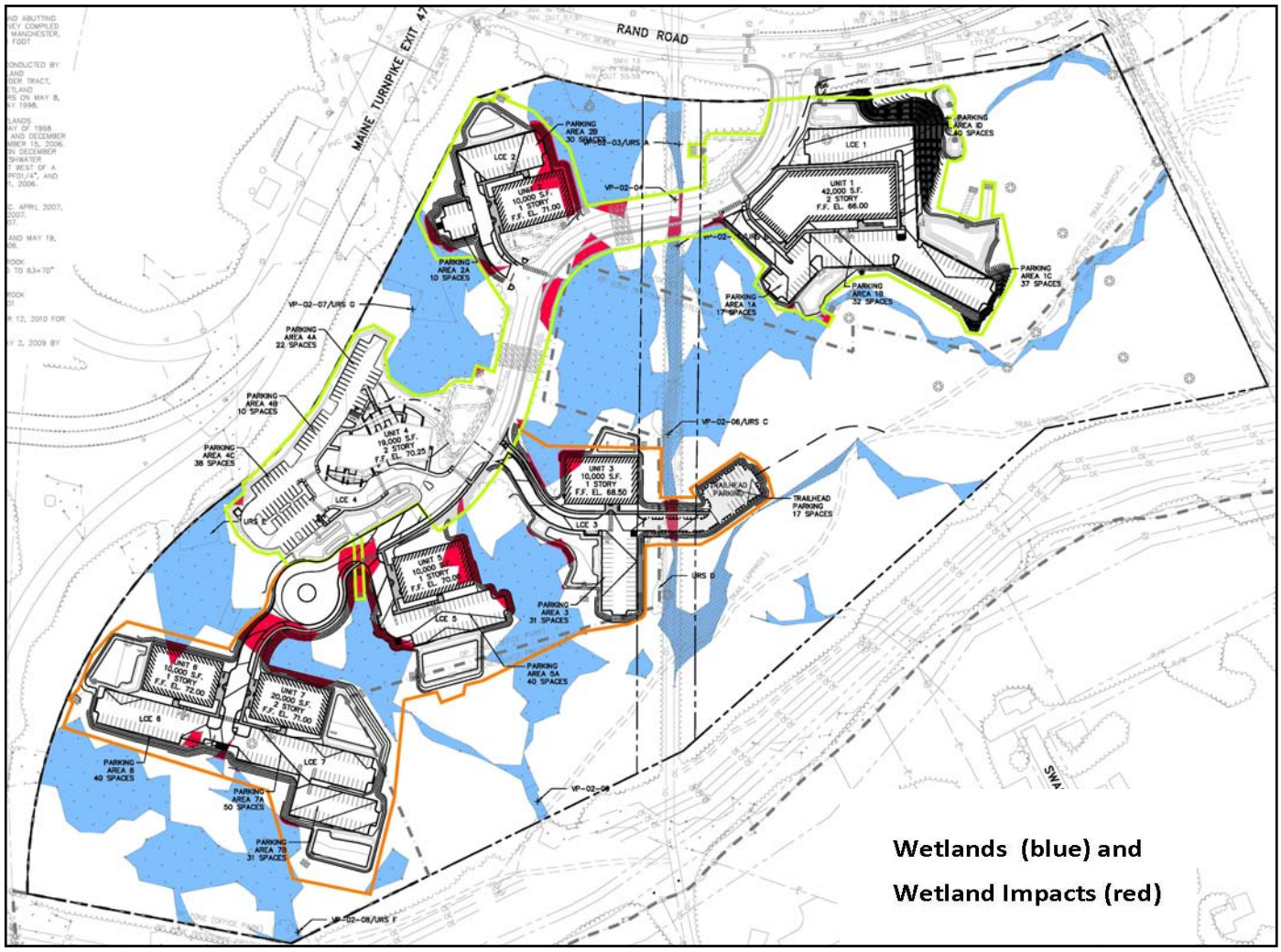
The Planning Board workshop was held on November 10, 2015 where the Board asked questions about the number of employees and requested further information on gravel wetlands. The applicant will provide details of the gravel wetlands as part of their presentation at the PB Hearing.

A total of 61 notices of this workshop were sent to property owners within 500 feet and to interested citizens and a notice was published in the November 30th and December 1st, 2015 editions of the *Portland Press Herald*. A Neighborhood Meeting was held on October 26, 2015 and there were no members of the public in attendance (see Attachment E). The Planning office has been contacted by Jaime Parker of Portland Trails and he has confirmed they do not have comments. One other e-mail (no address given) noted that an insurance office is not "Technology" but this development is in an area zoned "Office Park".

IV. BACKGROUND AND EXISTING CONDITIONS

The Portland Technology Park is a 7 unit office park, developed as Planned Unit Development (condominium), which is currently owned by the City of Portland with no buildings constructed yet. It is located near the Maine Turnpike Exit 47 between Rand Road and Westbrook Street. It was developed by the City with the aim of providing a location for emerging high technology businesses, including but not limited to biotechnology and information technology companies. The background to its development is included in Attachment 1.

The City completed the first phase of the access drive and associated stormwater management and treatment measures in 2013 and a gas line was installed early in 2015. The park is currently being marketed.



The layout of the 26 acre office park was constrained by the extent of wetland areas, as shown in blue in the plan above; the red shows how the proposed buildings impact wetlands. LCE#4 does not directly impact wetlands, but

the proximity of wetlands is a key factor in the layout of the building and parking and the design of the stormwater management system.

The office park is associated with a 13 acre conservation area abutting the office park along the south boundaries of LCEs 1, 3, 5 and 7. This is also owned by the City of Portland and managed by Portland Trails through an agreement with the City and Condominium Association that is managing the office park area. A trailhead with parking was constructed as part of the completed first phase.

In 2012 the project was reviewed for conformance with Subdivision, OP zoning and Site Plan standards. There are a number of key issues that frame the consideration of the amendments and the specific proposals for LCE#4:

- The office park is governed by an approved Design Guide (Attachment 3);
- A Tree Preservation Plan was one of the approved plans (Plan P4);
- A waiver was given for the size of the parking spaces (8' 2" X 18 instead of 9' by 18') throughout the park in order to minimize the area of impervious surface;
- A waiver was granted for providing sidewalk on one side of Rand Road;
- A waiver was granted to allow landscaping details to be deferred to the review for each site; Condominium bylaws include conservation easement for area abutting the office park;
- A TDM was required**.**

V. PROPOSED DEVELOPMENT

The proposed development is to provide a headquarters building for the Patrons Oxford Insurance Company and Attachment Fi includes an explanation of how this site was selected and the philosophy that guided the design of the building, its amenities and the site layout. LCE#4 was originally envisaged to be part of phase 2 and the existing access drive does not reach this lot. In order to develop it, the project has included the extension of the access drive along a relocated route to enable the revised layout of the proposed building and parking on LCE#4. The modifications to the access drive also entail modifications to the stormwater system (gravel wetlands), and therefore the development of the LCE has also triggered amendments to the overall subdivision plat and site plan as summarized below.

A. SUMMARY OF AMENDMENTS TO SUBDIVISION PLAT AND OVERALL SITE PLAN

The amendments to the Subdivision Plat and Overall Site Plan (see Attachments A and B for applications) comprise the expansion of the northern boundary of LCE#4 and the minor adjustment of the location of the access drive and the boundaries of abutting LCE 5 and LCE6, along with a modification of the gas line where it nears the turning circle and the removal of one of the proposed gravel wetlands. The underlying detailed revisions can be seen on the Overall Revised Site Plan (Plan P13). The draft plat would need to be revised to document the MDEP/ACOE approvals and any revised or additional conditions of approval prior to signature by the Planning Board.

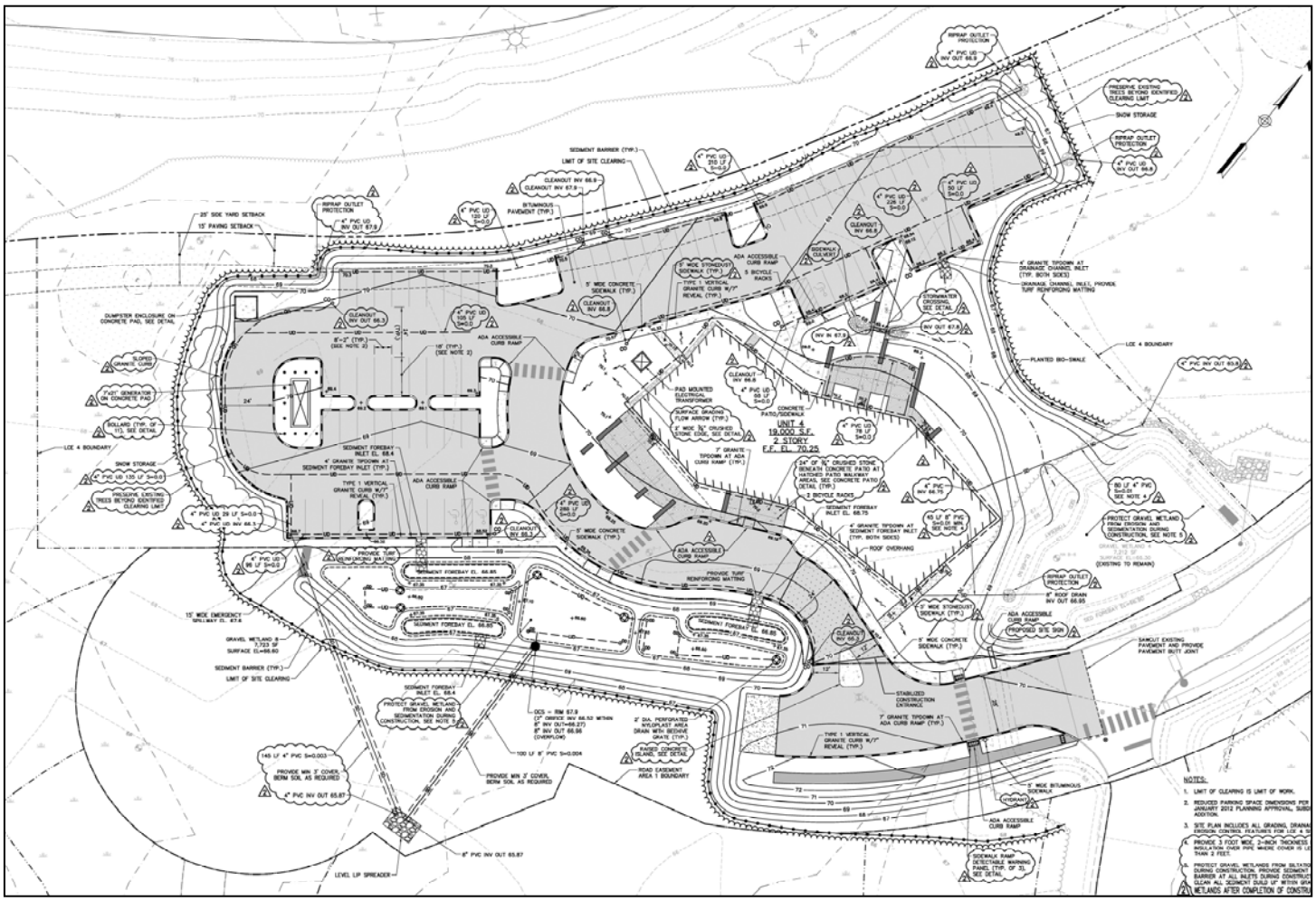
B. SUMMARY OF PROPOSALS ON LCE #4

The proposal details are found in Attachments F, G, I and J and Plans P10 to P40. The two story office building (19,000 sq. ft. total floor space) is designed with a main entrance from the south and an employee's entrance with patio on the north. The parking area for 70 vehicles is linked to the building with crosswalks and sidewalks and extensive planting is shown on the Planting Plans (Plans P31, P32 and P33). Two gravel wetlands are located along the east side of the site to drain and treat stormwater.

Since the PB Workshop a large generator has been added to the site plan and has posed a challenge due to its scale and anticipated noise levels.

The LCE boundary has been enlarged by the relocation of the access drive to allow for possible future expansion. The proposal under review is for a building with 1000 sq ft less floorspace than included in the 2012 site plan with 8 fewer parking spaces, although the impervious surface has increased because the access drive between the parking and the main access drive is longer (the impervious surfaces on LCE#5 have been reduced).

The final site plan (Plan P14) is extracted below (the bubbles denote changes from the preliminary site plan):



VI. RIGHT, TITLE AND INTEREST; FINANCIAL & TECHNICAL CAPACITY & SUMISSION REQUIREMENTS

The application includes the Purchase and Sale Agreement between the City of Portland and Patrons Oxford Insurance Company dated March 2015 (Attachment C). The project will be funded through internal resources, and a letter from the parent company has confirmed the financial capacity of the Patrons Oxford Insurance Company to carry out the project (Attachment D).

VII. STAFF REVIEW

The staff review has focused on the subdivision and site plan issues that were referenced in the approval of the project in 2012 (see above). At that time a comprehensive review was undertaken in respect of the Office Park Zoning requirements, and the ordinance requirements under Subdivision and Site Plan.

The proposals are relatively minor amendments to the Subdivision and Overall Site Plan, although within LCE#4 the revisions are more substantial. Such changes were anticipated in the 2012 conditions of approval (above and in Attachment 2) and the following review has been structured to address these conditions:

A. *(Subdivision) That the development of limited common element areas is subject to review and approval by the City of Portland Planning Authority for conformance with the Portland Technology Park Design Guidelines and City of Portland Code of Ordinances, Chapter 14 Land Use, Article v. Site Plan for building architecture, site landscaping, site pedestrian circulation, bicycle parking, lamp specifications and signage and any changes or alterations to approved traffic, parking, access, utility, exterior lighting, tree preservation and stormwater features; and*

- **Architecture**

Scott Simons Architects have designed the proposed building and this is the same firm that prepared the approved PTP Design Guidance. The underlying design philosophy and objectives are outlined in Attachments Fi, Fvi, and I.



The submitted architectural information was reviewed by staff and the Design Review comments are included in Attachment 4; they confirm that the PTP Design Guidelines have been met, except regarding signage which is discussed in detail below.

- **Site Landscaping**

The applicant has submitted Planting and Material Plans (Plans P30 to P33) which have been reviewed by the City Arborist, Jeff Tarling. Mr. Tarling's comments on the preliminary proposals was very complementary (Attachment 5), but since then a large generator has been located within the largest parking island (resulting in the loss of four trees) with only bollards around it and no screening or planting.

Staff understand from the applicant's consultants that there are no other suitable locations for the generator because the associated sound levels mean it must not be near a boundary nor near the building. Although the generator is at the most distant part of the site from the drive entrance, its appearance and location effectively undermine the site plan objective of requiring landscaped islands in parking areas.

Staff have suggested a number of ways that the generator could be slightly relocated on a larger island with greater screening, but there has not been time to fully explore and review the options. Staff suggest a condition of approval that allows time for further discussion at staff level to agree a revised approach. The Board may wish to provide direction to staff on this issue.

- **Site Pedestrian circulation**

The preliminary Site Plan for LCE#4 included crosswalks across the parking aisles and some sidewalks between the parking areas and the entrances. The City's Traffic Engineering reviewer Tom Errico was concerned that in some cases these did not take account of pedestrian "desire lines" and he requested more direct routes (Attachment 8). The final site plan (Plan P14) has revised several of these routes and Mr Errico considers these to be acceptable (Attachment 8).

- **Bicycle parking**

The preliminary submission included 10 bicycle parking spaces located at the employee's entrance and the applicant was requested to meet the numerical ordinance requirement of 14 spaces for bicycles and also provide some near the front entrance.

The final proposals have provided 10 bicycle parking spaces near the rear (employee) entrance and 4 bicycle parking spaces near the front entrance (Attachment J and Plan P14) and these meet the ordinance requirements.

- **Signage**

The applicant has submitted sign concepts in Plan P40 and Attachment I confirms that the signage will be metal lettering (images suggest these are mounted on a wood background) and lit by wall or site mounted light fixtures.

The approved Design Guidance includes a section on signage (Attachment 3, page 9) which states:

> *"Development proposals shall identify all proposed signage. Signs shall be designed in proportion and constructed of permanent materials and shall be coordinated with the building and landscaping design through the use of appropriate materials and finishes. Well-designed signage is encouraged in the Development, both in front of the building and on the building, as allowed by the City's existing ordinances. The use of raised metal letters, individual metal letters, and etched masonry or wood is encouraged; surface mounted plastic letters and interior –lit box signs are not allowed. Signs should be illuminated at night either from behind the raised lettering or with focused floodlights."*

The Urban Design comments (Attachment 4) notes that the concept signage generally addresses the design guidance in terms of materials, but that the proposed lighting of the signs does not meet City Technical Standards regarding site lighting, and also that it appears that the proposals would not meet the City's Sign Ordinance in terms of size and number (although the Site Plan ordinance does allow for waivers for signs under some circumstances).

The Planning Board is requested to approve the proposed signage in principle and staff suggest that there are some unique circumstances that would support waivers from the standards. Further information and discussion is needed in order to confirm the basis for granting any waivers. A suggested condition of approval confirms the Boards approval in principle with staff to follow up regarding details.

- **Traffic and revisions**
  The 2012 approval included approval to a Traffic Movement Permit (TMP) for the entire Office Park (Attachment 2). The applicant has submitted a Traffic Summary (Attachment Fii) to show how the trip generation from the proposed office development relates to the TMP, and the City's Traffic Engineering reviewer Tom Errico has confirmed that the proposed project complies with the TMP and that a further traffic study is not required (Attachment 8).

- **Parking revisions**
  The 2012 approval included a blanket waiver for the entire Office Park for parking spaces to be 8'2" wide and 18' long. This was partly to minimize the impervious surface, and partly to allow a higher parking ratio as the anticipated occupants were likely to be more car-oriented because of the location of this site near I-95. The total number of parking spaces allowed was therefore more that we would typically allow, and a further condition required that each LCE developer had to justify the parking provision at the site plan stage (Attachment 2).

  The proposals include 70 parking spaces as compared to the 78 parking spaces that were proposed for the LCE#4 in the original approved site plan (for a 20,000 sq. ft. building). The applicant has submitted a Parking Analysis (Attachment Fii) to justify the need for the 70 spaces and the City's Traffic Engineering reviewer Tom Errico has confirmed that that the parking is acceptable (Attachment 8).

- **TDM Plan**
  The original approval for the overall Office Park required a TDM Plan and the expectation was that each unit would initiate TDM actions, and as the number of developments increased the TDM would evolve as coordination and opportunities for larger scale initiatives emerged. This situation is somewhat unusual as the current applicant is operating somewhat in isolation; staff encouraged the applicant to consider what initiatives would be possible from the outset for this particular office development.

  The applicant submitted a draft TDM and revised it to address the suggestions from Tom Errico, the City's Traffic Engineering consultant, in Attachment 7. The submitted TDM includes various commitments including an employee survey, monitoring and progress reports.

  Mr Errico considers the revised TDM to be acceptable and notes that the applicant has agreed to designate car/van pool parking spaces (Attachment 8); a suggested condition of approval documents these commitments.

- **Access revisions**
  The revised LCE#4 boundary has been enlarged to the east so that the distance to the main access drive is modified to include a longer internal drive with a channel separation (edged by a mountable curb so it's acceptable to the Fire Department) where it meets the main drive (Plan P14). The City's Traffic Engineering reviewer Tom Errico previously had some concerns about the details, but based on information in the final submission has confirmed that the access design is acceptable. *(*Attachment 8*)*

- **Exterior Lighting**
  The proposals are described in Attachment Fv; a Photometric Plan is attached to that narrative and the lighting specifications were submitted as part of the final submission. The overall lighting proposals are acceptable.

- **Tree Preservation**
  The expansion of LCE#4 has extended the boundary of the LCE area northwards into an area that was previously shown to be a tree preservation area in order to accommodate the parking lot and associated parking aisle with a snow storage area- compare Plan P4 (Approved Tree Preservation Plan) and Plan P5 (Revised Tree Preservation Plan).

  While this area did not include any trees that were specifically identified for preservation in the previous Tree Survey, staff consider that this area should not be cleared for parking unless there are no other locations for the 3-4 parking spaces (and associated parking aisle) that result in impacts to the previously protected trees. Discussions with the applicant's consultants suggest that that 3 parking spaces can be accommodated elsewhere on the site but would likely result in reduced or eliminated landscaped islands. There has not been time to fully consider the tradeoffs in association with the City Arborist, and therefore staff recommend that this issue be the subject of a condition of approval that would allow for the balancing of tree preservation and parking lot landscape.

  The limits of clearing of trees, once agreed on the plans, should be addressed in the Construction Management Plan (eg tree protection measures) and identified on site with feno markers or similar to ensure that here is no unnecessary clearance of trees.

- **Stormwater**

  Overall Office Park
  The applicant has included an extensive explanation of how the revised layout for LCE#4 (and relocated main drive) has resulted in the need to modify the overall number and location of gravel wetlands, and the project has also been reanalyzed in terms of the recent MDEP stormwater guidance (Stormwater Report (Attachment Fiii). The amended overall stormwater management is subject to MDEP review under SLOD and an amended NRPA permit in relation to wetland impacts. The Stormwater Report (Attachment Fiv) along with Plans P7, P8 and P9 show the revised stormwater management proposals (note that the hydrocad calculations were submitted but are not attached). As these are being reviewed by the MDEP and ACOE and would meet City standards, the focus of this review has been on the proposals for LCE#4.

  LCE#4
  The MDEP review is looking at the overall Office Park and how the Stormwater Management proposals for the entire site meet Chapter 500 and NRPA standards. For LCE#4 there are no wetland impacts and the Peer Engineering review has been focused on the LCE#4 area itself to determine that it meets the City standards (Chapter 500) in respect of the LCE area itself. The construction details and management were also of concern, as the soils in this area require some special methods of stabilization (see submitted Geotechnical Report in Attachment H).

  The City's Peer Engineer for this project is Jim Seymour of Sebago Technics, as Dave Senus of Woodard and Curran is the representative for the applicant Patrons Oxford. The applicant's engineers have met with Mr Seymour and the final submissions have been revised to address many aspects of the Peer Engineer's preliminary comments.

Jim Seymour has provided final comments (Attachment 6) and there are several issues that he considers still need to be addressed:

- Stormwater within the site: the proposals generally meet the City's Ordinance which requires compliance with Chapter 500 and ensuring that there are no stormwater impacts on abutting properties. Mr Seymour has provided comments on details and grading which could have consequences for erosion, groundwater contamination and icing of paths. Staff suggest that these be addressed by the applicant as far as is feasible given the constraints of the site.

- Construction Management Plan: The engineering review comments identify a number of concerns that need to be addressed in the Construction Management Plan when the final version is developed. A suggested condition of approval articulates the need to submit a more developed Construction Management Plan.

- Tracking information: Mr Seymour and planning staff had requested that a table of base data be compiled (some data is included in the submission but it is in several different places) that can be used in the future to track each site as its reviewed and developed against the overall permitted levels of parking, traffic, impervious surfaces etc. Staff will work with the applicant to compile this table and it is referred to in a suggested condition of approval.

  In respect of impervious surfaces, LCE#4 is the first of the lots to be developed and the area of impervious surface has increased (although an abutting lot has reduced impervious surface). Staff is concerned that as other sites are developed, probably with similar revisions to impervious surfaces, that the cumulative impacts would need to be trackable and consistent with the original stormwater management regime. The applicant has confirmed (Stormwater Report in Attachment Fiv) that as each lot is developed there would need to be a similar overall review, by the MDEP and City. The expectation is that if a proposed development increased the imperious surface that it would need to revise the stormwater management and treatment accordingly within its own LCE.

B. *(Site Plan) That when individual units are proposed for site plan review the applicants should submit detailed specifications for snow storage management/protection of gravel wetlands, exterior lamp fixtures (including wall mounted), and consider the opportunity for trail links with the wider trail network on the RPZ open space part of the site; and*

(Site Plan) That the site plans for individual units shall be brought before the Planning Board for review and approval, and the Board reserves the right to review individual units under the standards of the site plan ordinance.

- **Snow storage management/protection of gravel wetlands**
  The final submitted Site Plan (Plan P14) identifies snow storage areas that are consistent with the Landscape Plans.

- **Exterior light fixtures -** See above.

- **Trail links**
  The LCE#4 is on the opposite side of the overall site from the Conservation Area and trail head, and a direct trail access is not possible. An "inter-lot" trail system has not been developed and the extent of wetlands would be a challenge in any case. The applicant has indicated in the Project Description (Attachment Fi) that the creation of pedestrian links to trails outside the site would be a future intention once nearby lots are developed. The Board may wish to consider whether a condition of approval should document the applicant's intention.

- **Other site plan standards**
  The site plan application for LCE#4 is comprehensive and addresses all of the ordinance site plan and zoning standards in the narratives in Attachment F and J. Other aspects that have been addressed in the narrative include significant natural features; solid waste disposal; and crime prevention through environmental design.

VIII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed amendments to the subdivision plat, and the proposals for the site development of LCE#4 (for Patrons Oxford Insurance Company) within the Portland Technology Park.

IX. PROPOSED MOTIONS FOR THE BOARD TO CONSIDER

A. SUBDIVISION 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 December 8, 2015 for application #2015-172 (Portland Technology Park) relevant to the Subdivision regulations, and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan (**is/is not**) in conformance with the subdivision standards of the land use code and (**approves/does not approve**) the application, subject to the following condition of approval:

i. The applicant shall finalize the amended subdivision plat to address Board and staff comments; the final plat to be submitted for review and approval by Corporation Counsel, Department of Public Works, and the Planning Authority prior to signature by the Planning Board.

C. SITE PLAN 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 December 8, 2015 for application #2015-171 (Portland Technology park, LCE#4) 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:

i. That the applicant shall obtain and submit all required State and Federal permits/amended permits prior to the issuance of a building permit; and

ii. That the applicant shall submit revised proposals, for review and approval by the Planning Authority and City Arborist prior to the issuance of a building permit, to meet the following objectives:

   a. To relocate and provide enhanced planting around the proposed generator to achieve a landscaped parking island that integrates with the overall landscape and provides screening from both local and distant viewpoints; and

   b. To relocate three (3) parking spaces from the northeast corner of the parking lot to allow the extent of tree clearance to be significantly reduced.

iii. That the Planning Board supports the signage concepts in principle, but requests that the details address the comments of the Urban Designer dated 11.25.2015 so that waivers may be considered by the Planning Authority; and

iv. That the applicant shall introduce TDM measures as set out in the TDM plan dated 11.25.2015 and e-mail from Lauren Swett dated 11.30.2015 (confirming re van pool and other priority parking) and provide a progress report to the Planning Authority within one year of the issuance of a Certificate of Occupancy;

v. The developer/contractor/subcontractor must comply with conditions of the submitted and approved stormwater management plan and sediment and erosion control plan and associated inspection and maintenance manual (all from September 2015), 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. The PTP condominium documents outline the division of responsibilities in this regard.

vi. That the applicant shall address the comments of the Peer Engineering Reviewer Jim Seymour dated 12.3.2015 as far as possible, and work with staff to create a table of "base" information to assist with future site plan and stormwater reviews of the other lots; and

vii. That the applicant shall prepare and submit a final Construction Management Plan, for review and approval by the Planning Authority prior to the work starting on site (including clearance of trees) that addresses the items identified in the applicants submission (Attachment J); addresses the comments of the Peer Engineering Reviewer Jim Seymour dated 12.3.2015; and requires that the boundary of the revised LCE#4 shall be marked with permanent markers such as FENO markers in the field prior to any work on the site.

ATTACHMENTS:

Report attachments

1. Background to PTP
2. 2012 Planning Board approval letter
3. PTP Design Guidelines August 2012
4. Urban Design Review comments 11.25.2015 & 11.4.2015
5. City Arborist comments 11.4.2015
6. Peer Engineering Reviewer J Seymour Sebago Technics 12.3.2015
7. Traffic Engineering suggestions for TDM
8. Traffic Engineering Reviewer Tom Errico 12.3.2015

Public Comments

None

Applicants submittal

A. Cover letter & Subdivision Amend. Application
B. Site Plan Application incl Fire Dept Info
C. P&S Agreement
D. Letter of financial capacity
E. Neighborhood Meeting Certificate
F. Site Plan Subject Narratives including:
   i. Project Description incl Schematic Design
   ii. Traffic
   iii. Significant Natural Features
   iv. Stormwater Report
   v. Design Narrative including photometric
   vi. Other narratives
G. Additional Information re Site Plan
H. Geotechnical Report
I. Written response to Design Review comments
J. Final submission- response to review comments 11.20.2015
K. Updated Wastewater Capacity application
L. Updated TDM Plan

Overall Plans

P1. Survey
P2. Overall approved Site Plan
P3. Most recent approved plat
P3. Draft revised subdivision plat
P4. Approved Tree Preservation Plan
P5. Revised Tree Preservation Plan
P6. Wetland Impact Figures
P7. Pre-development & Post Development Drainage Area maps
P8. Post development Subcatchment area map
P9. Post development Stormwater treatment overall plan

Site Plans

P10. Cover Sheet
P11. Notes
P12. Existing Conditions
P13. Overall proposed Site Plan
P14. Proposed LCE#4 Site Plan
P15. Proposed LCE#4 Grading and Drainage Plan
P16. Overall proposed Grading and Drainage Plan 1
P17. Overall proposed Grading and Drainage Plan 2
P18. Overall proposed Utility Plan 1
P19. Overall proposed Utility Plan 2
P20. Roadway Profile
P21. to P28. Details (8 plans)
P29. LCE#4 Materials Plan
P30. LCE#4 Shrub and Herbaceous Planting Plan
P31. LCE#4 Tree Planting Plan
P32. LCE#4 Landscape Details
P33. to P35. Floor Plans (3 plans)
P36. & P37. Building elevations
P38. Fire and Life Safety Plans
P39. Building renderings
P40. Signage concepts

POLICY BACKGROUND TO PTP

Industry and Commerce Plan- 1994

As part of the comprehensive planning initiative to examine industrial areas, a portion of the residentially zoned area between the Oxford Canal and the Pine Tree Industrial Subdivision was recommended for a moderate impact industrial zone. The area was rezoned pursuant to that recommendation.

Rand Road Interchange and Proposed Post Office Distribution Center:

The Maine Turnpike Authority proposed a new interchange and the extension of Rand Road to the Westbrook Connector in the mid-1990's. As the Turnpike was undergoing review for the interchange, the U.S. Post Office considered the entire 50 acre site as a distribution facility adjoining the interchange. The post office proposal was required to do an alternatives analysis for its Environmental Assessment and determined that a site in Scarborough was more appropriate. The City of Portland purchased the 50 acre site at that time.

Brighton Avenue Corridor Study and Outer Brighton Avenue Task Force Report -2002

In response to the proposed interchange and the potential for new development, Portland and Westbrook received a planning grant from PACTS to analyze the land use patterns, traffic impacts and streetscape for the Brighton Avenue Corridor, which included the area surrounding the proposed interchange. The Brighton Avenue/Main Street Corridor Traffic and Streetscape Study and the Outer Brighton Avenue Task Force Report were adopted as part of the City's comprehensive plan in 2001. The Task Force report recommended that roughly half of the site be rezoned to Office Park and the remainder be rezoned to Resource Protection, in order to preserve the wetlands and open space. The purpose statement for OP states it is to provide "substantial areas for integrated development of professional offices in a park- or campus-like setting which are of the highest quality, are well designed and maintained and are compatible with their natural surroundings." Due to the sensitive natural environment and size of the parcel, the task force determined that the OP zone was a more suitable zone than an industrial designation. The City Council rezoned approximately 25 acres to OP and the remainder to RPZ. A portion of the adjoining property and the utility right-of way were included in the RPZ designation at that time.

After the above rezoning was adopted, Maine Audubon approached the City with a proposal to rezone the remaining land to RPZ that lays between the newly designated RPZ land and the RPZ land of the Fore River Sanctuary. Maine Audubon owned the Fore River Sanctuary of which a portion of their land was zoned RPZ and more recent acquisitions were zoned residential. The other parcels were owned by either Portland Trails or the City. The City Council rezoned this area to RPZ, which protected over 200 acres of wetlands and open space between the Fore River and Office Park land near the interchange.

2006 Rezone from Resource Protection Zone (RPZ) to Office Park (OP):

In 2006, the Economic Development Department sponsored a zone change for the site and a zoning text amendment to the Office Park Zone District. Both proposals were intended to accommodate the future development of the site for clean high tech industrial uses and to preserve open space including the retention of land to serve as a trail head for Portland Trails. The zone change and text amendments were ultimately adopted by the City Council.

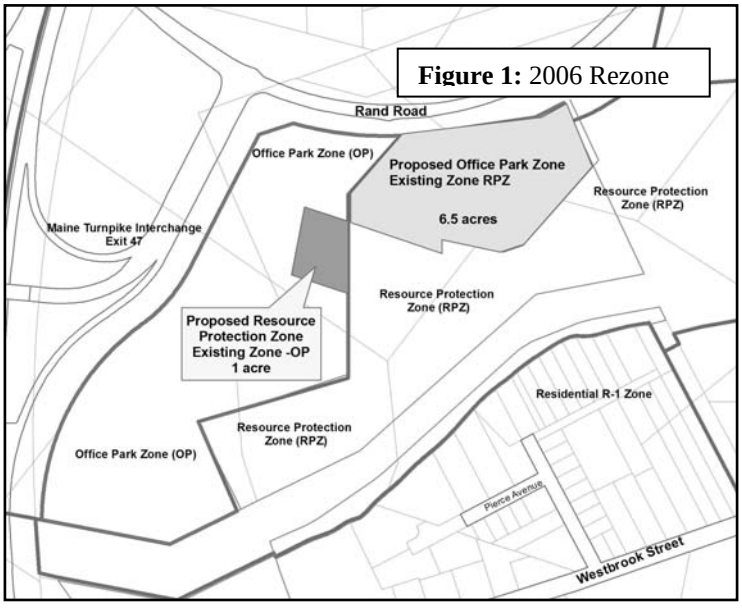


Figure 1: 2006 Rezone

Source: 5/18/06 PB Report #30

CITY OF PORTLAND, MAINE

PLANNING BOARD

Carol Morrissette, Chair
Stuart G. O'Brien, Vice Chair
Joe Lewis
Lee Lowry, III
Michael J. Patterson
David Silk
Bill Hall

February 3rd, 2012

Gregory Mitchell
City of Portland Economic Development Dept.
City of Portland
389 Congress Street
Portland, Maine 04101

David Senus, PE
Project Manager
Woodard & Curran
41 Hutchins Drive
Portland Maine 04102

Project Name: Portland Technology Park
Project ID: 10-99700005
Project Address: 300 Rand Road (aka 1581 Westbrook Street)
CBL: 249 A001 & A002; 250 A001; 251 A005& A009; 255 A002
Applicant: City of Portland Economic Development Department
Planner: Jean Fraser

Dear Mr Mitchell and Mr Senus:

On January 24th, 2012 the Portland Planning Board considered and approved a Level III Final Site Plan and Subdivision proposal to construct an Office Park Planned Unit Development comprising 7 units, with a total of 122,000 sq ft, on a 26.2 acre parcel at 300 Rand Road. The proposal includes the provision of a 1400 linear foot long roadway and the creation of a separate but associated Conservation Easement on the abutting 13.8 acre woodlands. The Planning Board reviewed the proposal for conformance with the standards of the Traffic Movement Permit, Subdivision Ordinance and Site Plan Ordinance.

The building architecture, site landscaping, site pedestrian circulation, bicycle parking, lamp specifications and signage within the limited common element areas of each unit will be subject to review and approval by the Planning Board for conformance with the Portland Technology Park Design Guidelines and City of Portland Code of Ordinances, Chapter 14 Land Use, Article v. Site Plan.

The Planning Board approved the application with the following motions, waivers and conditions as presented below.

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in Planning Board Report # 04 -12 for the Portland Technology Park, Rand Road relevant to the Site Plan and Subdivision reviews and other regulations, and the testimony presented at the Planning Board hearing, the Planning Board finds the following:

SIDEWALK WAIVER

The Planning Board voted 5-1 (Lowry recused; Lewis opposed) that the following criteria do apply, and therefore waives the requirement for a sidewalk along the frontage of the Portland Technology Park site with Rand Road, subject to the provision of the internal sidewalk and crosswalk to the opposite side of Rand Road being constructed as part of phase 1 of the development:

C) A safe alternative-walking route is reasonably available, for example, by way of a sidewalk on the other side of the street.

F) 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.

TRAFFIC MOVEMENT PERMIT

The Planning Board voted 6-0 (Lowry recused) that the plan is in conformance with 23 MRSA 704-A and Chapter 305 Rules and Regulations pertaining to Traffic Movement Permits.

SUBDIVISION:

The Planning Board voted 6-0 (Lowry recused) that the plan is in conformance with the subdivision standards of the Land Use Code, subject to the following eleven (11) conditions of approval:

i. That the Subdivision Plat shall be finalized to the satisfaction of the Planning Authority and Corporation Counsel and include revisions to the phasing references, easements (including that to Portland Trails), the Condominium Association documents and relevant conditions; and

ii. That the Condominium Association documents, including references to the Stormwater Management Inspection and maintenance requirements, shall be finalized to the satisfaction of the Corporation Counsel prior to the recording of the Subdivision Plat; and

iii. That the applicant shall submit for review and approval by Corporation Counsel, and show on the Subdivision Plat, all final documents containing easements and encumbrances as represented in the application and on the plans; and

iv. This approval entitles the applicant and future developers of the office park units to develop the maximum number and size of parking spaces as shown on the Subdivision Plat and Overall Site Plan subject to providing confirmation of the need for these spaces and space dimensions (via a parking analysis) at the time that the unit is under site plan review; and

v. That the condominium association shall develop and manage a Transportation Demand Management (TDM) plan acceptable to the Planning Authority, reviewed as part of the initial and subsequent site plan approvals for each building unit within the limited common element areas; and

vi. That the development of limited common element areas is subject to review and approval by the City of Portland Planning Authority for conformance with the Portland Technology Park Design Guidelines and City of Portland Code of Ordinances, Chapter 14 Land Use, Article v. Site Plan for building architecture, site landscaping, site pedestrian circulation, bicycle parking, lamp specifications and signage and any changes or alterations to approved traffic, parking, access, utility, exterior lighting, tree preservation and stormwater features; and

vii. The clearing limits shall be restricted to Limited Common Element (LEC) areas, Easement Area 1 associated with the site roadway; Easement Area 2 associated with access to the trail head parking, and Easement Area 3 associated with the trail head parking; and

viii. That the applicant and all assigns shall comply with the conditions of Chapter 32 Stormwater including Article III, Post-Construction Storm Water Management, which specifies the annual inspections and reporting requirements. The developer/contractor/subcontractor must comply with conditions of the construction stormwater management plan and sediment & erosion control plan based on City standards and state guidelines; and

ix. That the applicant shall submit large scale Tree Preservation Plan and Forest Management Plan within three months of this approval. The Forest Management Plan would contain existing conditions and management recommendations that the condominium owners and easement holders would follow in sustainable forestry management with goals of protecting habitat, forest health and recreation; and

x. That the proposed Limited Common Elements, shown as "LCE" on the plan, be marked with permanent markers such as FENO markers in the field prior to any work on the site to ensure that the limits of clearance and tree preservation areas are clear on the site; and

xi. That the RPZ Zone line, trailhead parking area, significant tree areas and particular tree saves (as identified on the Tree Preservation Plan) be marked or located in the field prior to any site work.

SITE PLAN REVIEW

The Planning Board voted 5-1 (Lowry recused; Lewis opposed) that the plan is in conformance with the site plan standards of the Land Use Code, subject to the following four (4) conditions of approval:

i. That the applicant receives and submits all required State and Federal permits prior to the issuance of a building permit; and

ii. That the applicant shall submit revised plans/documents that address the 1.19.2012 comments from Tom Errico, Traffic Engineering Reviewer, regarding the four items under " Additional Comments" for review and approval by the Planning Authority prior to the issuance of a building permit; and

iii. That when individual units are proposed for site plan review the applicants should submit detailed specifications for snow storage management/protection of gravel wetlands, exterior lamp fixtures (including wall mounted), and consider the opportunity for trail links with the wider trail network on the RPZ open space part of the site; and

iv. That the site plans for individual units shall be brought before the Planning Board for review and approval, and the Board reserves the right to review individual units under the standards of the site plan ordinance.

STANDARD CONDITIONS OF APPROVAL

Please note the following standard conditions of approval and requirements for all approved site plans:

1. **Develop Site According to Plan:** The site shall be developed and maintained as depicted on the subdivision plat and site plan and in the written submission of the applicant. Modification of any approved site plan or alteration of a parcel which was the subject of site plan approval after May 20, 1974, shall require the prior approval of a revised site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code. Modification of an approved subdivision plan requires the prior review and approval of an amended subdivision plan by the Planning Board or Planning Authority.

2. **Separate Building Permits Are Required:** This approval does not constitute approval of any associated building or road plans, which must be reviewed and approved by the City of Portland's Inspection Division.

3. **Recording of Waivers:** Pursuant to 30-A MRSA section 4406(B)(1), any waiver must be specified on the subdivision plan or outlined in a notice. The plan or notice must be recorded in the Cumberland County Registry of Deeds within 90 days of the final subdivision approval.

4. **Mylar Recording Plat:** The final revised and approved subdivision recording plat must be signed by the Planning Board prior to recording in the Cumberland County Registry of Deeds. A mylar copy and 5 paper copies of the recorded plat (with dates and details of the recording) must be submitted to the Planning Division prior to the release of any associated building permit.

5. **Final Plan Meeting Conditions of Approval:** Seven (7) final sets of plans must be submitted to and approved by the Planning Division prior to the release of a building permit, street opening permit or certificate of occupancy for site plans. If you need to make any modifications to the approved plans, you must submit a revised site plan/subdivision application for prior review and approval by the Planning Authority or Planning Board.

6. **Expiration of Approvals:** The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval. Requests to extend approvals must be received before the one (1) year expiration date. The subdivision approval is valid for three (3) years.

7. **Inspection Fee:** An Inspection Fee of $300 is required for the site inspections conducted by the Planning Division, unless waived by the City Manager.

8. **Preconstruction Meeting:** Prior to construction, a pre-construction meeting shall be held at the project site. This meeting will be held with the contractor, Development Review Coordinator, Public Service's

representative and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved plans. The site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

9. **Department of Public Services Permits:** If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

10. **As-Built Final Plans:** Final sets of as-built plans shall be submitted digitally to the Planning Division, on a CD or DVD, in AutoCAD format (*,dwg), release AutoCAD 2005 or greater.

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning Division at 874-8632. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Jean Fraser at (207) 874- 8728.

Sincerely,

Carol Morrissette, Chair
Portland Planning Board

Attachments:
1. 1.19.2012 Tom Errico, Traffic Engineering Reviewer comments
2. Planning Board Report #04-12

Electronic Distribution:
Gregory A Mitchell, Acting Director of Planning and Urban Development
Alexander Jaegerman, Planning Division Director
Barbara Barhydt, Development Review Services Manager
Jean Fraser, Planner
Philip DiPierro, Development Review Coordinator
Marge Schmuckal, Zoning Administrator
Tammy Munson, Inspections Division Director
Danielle West-Chuhta, Associate Corporation Counsel
Gayle Guertin, Inspections Division
Lannie Dobson, Inspections Division
Michael Bobinsky, Public Services Director
Kathi Earley, Public Services
Bill Clark, Public Services
David Margolis-Pineo, Deputy City Engineer
Greg Vining, Public Services
John Low, Public Services
Jane Ward, Public Services
Chris Pirone, Fire Department
Jeff Tarling, City Arborist
Tom Errico, TY Lin
Nelle Hanig, Economic Development Department
Assessor's Office
Approval Letter File
Hard Copy: Project File

Attachment 1

From: Tom Errico <thomas.errico@tylin.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: Katherine Earley <KAS@portlandmaine.gov>, David Margolis-Pineo <DMP@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>
Date: 1/19/2012 6:22 PM
Subject: Portland Technology Park

Jean - I have reviewed the Site Plan Application dated December 31, 2011 prepared by Woodard & Curran and offer final comments.

* The project meets requirements for a Traffic Movement Permit (TMP). The Applicant has submitted a TMP Application and I have determined that it is complete. Accordingly, a Traffic Movement Permit Scoping meeting has been scheduled for November 29th at 3:00pm in the Planning Conference Room. I would note that specific traffic study comments will be issued upon completion of the traffic study following the Scoping Meeting.

Status: A traffic impact study has been submitted by the applicant and I find the methods and conclusions to be acceptable. In general, I agree with the conclusion that a traffic signal is not warranted at the site drive and the proposed improvements provide reasonable accommodations for site traffic.

January 19, 2012 Status: No comment necessary.

* The applicant should provide information supporting a waiver for the provision of a sidewalk on Rand Road along their property frontage. Related to this issue will be the appropriate provision of how pedestrians will safely walk between the site and the sidewalk on the north side of Rand Road.

Status: The applicant has provided supporting information for a sidewalk waiver. I do not support item 1, that there is no reasonable expectation for pedestrian usage coming from, going to and traversing the site. I do support criteria 3 as noted in their letter. Jeff Tarling should provide expertise on whether criteria 6 is satisfied.

January 19, 2012 Status: It is my understanding that this issue has been resolved and a sidewalk waiver is supported by DPS.

* The applicant should provide information that supports the parking supply provided. Upon receipt of this information I will render a decision on issuing a waiver from the City's Technical Standards for parking stall size.

Status: I would suggest that additional supporting technical information be provided that supports the parking supply being proposed. One possible approach, if supporting documentation is not available, would be to design and permit the project for the assumed full parking supply as requested by the applicant. Only parking spaces that meet zoning requirements will be displayed on the plans for construction. Future expansion parking areas will be illustrated and can be constructed if tenant characteristics required the additional parking spaces.

January 19, 2012 Status: I support the condition of approval drafted by the Planning Department noting an upset limited on parking supply with final totals to be determined during site plan review.

* The applicant should provide information justifying the traffic circle on the project driveway. It does not seem to serve any traffic control purpose and requires addition pavement area that seems to run counter to project sustainability goals. If it is to remain, adjustments to the design may be required.

Status: The applicant has appropriately responded to this comment and I have no further comment.

January 19, 2012 Status: No comment necessary.

* The driveway approach to Rand Road indicates two approach lanes. I would note that the design criteria (storage length) for these lanes will be a function of analyses performed in conjunction with the traffic impact study, which has yet to be provided.

Status: The traffic study indicates the 95th% storage of the egress lane to be 80 feet and the left-turn ingress lane to be 70 feet. The proposed design provides in excess of the noted requirement and therefore I find the design to be acceptable.

January 19, 2012 Status: No comment necessary.

* I have an expectation that large tractor trailers will make occasional deliveries to individual building sites. The applicant should provide information on where these deliveries will occur and their ability to maneuver on-site without leaving the pavement.

Status: The applicant has provided turning template graphics that display adequate space for maneuvering and therefore I have no further comment.

January 19, 2012 Status: No comment necessary.

* The parking aisle near Building 6 and the motorcycle parking spaces is only 20 feet wide and does not meet City Technical Standards.

Status: The plan has been revised and I have no further comment.

January 19, 2012 Status: No comment necessary.

* The Layout plans illustrate "block" style crosswalks, but the details provide information for parallel line crosswalks. The detail should be revised.

January 19, 2012 Status: The detail has been added and I have no further comment.

* The location of the crosswalk nearest Rand Road concerns me. I need to evaluate this further before providing some guidance to the applicant.

January 19, 2012 Status: The revised crosswalk location is acceptable and I have no further comment.

* Further details on the layout of the trailhead parking lot should be provided. Specifically, what is the intended parking layout for an area that is proposed to be 58 feet wide by 60 feet long.

January 19, 2012 Status: The plans clearly note the parking lot details and I find them to be acceptable. I have no further comment.

* Coordination with the Maine Turnpike Authority is still outstanding and will need to be conducted. I will contact them as it relates to any potential traffic impact fee contribution.

January 19, 2012 Status: No action by the Maine Turnpike Authority is required for this project.

* The Design Guidelines document suggests providing parking spaces that are 8'-2" x 18' in size and therefore do not meet City standards. I would suggest that the project incorporate a combination of standard (9'x18') and compact (7.5'x15') sized parking spaces that will minimize pavement area and avoid the requirement of a technical waiver.

January 19, 2012 Status: I support the condition of approval drafted by the Planning Department that the reduced size parking stall will be permitted, but a final decision will be determined during site plan review when specific tenant needs are known.

* The provision of the a sidewalk on one side of the site driveway is based upon the assumption that it is private and does not need to following City standards for providing sidewalks on all property frontages, unless waiver criteria can be met. Corporation council should confirm that in fact the City ownership of the road does not require the City's sidewalk provision standards to be applied.

January 19, 2012 Status: It is my understanding that this issue has been addressed by Corporation Council.

Additional Comments

* **Through pavement arrows are not required on Rand Road and should be deleted.**

* **The applicant should confirm that adequate illumination will be provided at the proposed crosswalk on Rand Road.**

* **Signage at nose of island on Rand Road should be provided.**

* **A lane assignment sign for proposed left-turn lane on Rand Road shall be installed.**

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE, Senior Associate
Traffic Engineering Director
T.Y. Lin International
12 Northbrook Drive
Falmouth, ME 04105
207.347.4354 direct
207.400.0719 mobile
207.781.4753 fax
thomas.errico@tylin.com<mailto:thomas.errico@tylin.com>

Att. 3



DESIGN GUIDELINES

for

PORTLAND TECHNOLOGY PARK

City of Portland, Maine

08.08.2012

Prepared By:
Scott Simons Architects and
Woodard & Curran, Inc.

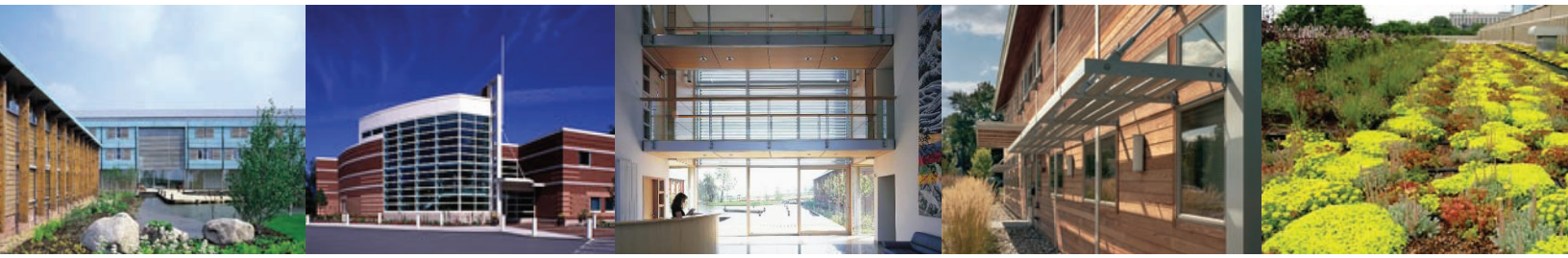


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Landscape design plays a vital role in a well designed office park by providing sun shading and in an eye pleasing humane environment.

INTRODUCTION

The development of the Portland Technology Park Development (PTPD) offers an opportunity to create a quality working environment expressing its own unique identity while, at the same time, becoming a model of environmental sustainability and a vital and integral part of the City of Portland. In general the achievement of these two goals requires:

Adherence to a code of design standards specifically identified for the building and open space.

Adherence to energy and environmental codes equal to or better than those required in the City of Portland Green Building Code.

The use of an architectural language that reflects the regional culture and the use of the building.

It is the intention of these guidelines to ensure a cohesive physical environment fitted properly to its site and its community. The guidelines are not meant to restrict the creative interpretation of Architects working at the Portland Technology Park Development in future years, but should be viewed as an opportunity to participate in the creative process of developing a timeless, sustainable and beautiful Technology Park Campus



A rendering of the proposed development from the North with the Rt 95 on-ramp shown to the right. Buildings shown are only examples which meet the intent of the Design Guidelines, they are not actual proposed designs. Rendering by Scott Simons Architects.





Buildings should be situated appropriately in the landscape with the long side facing south for passive solar opportunities. Solar shading devices in this building at USM Gorham prevent overheating in the summer while allowing for the sun to enter in the winter.
-University of Southern Maine Childcare by TFH Architects, Gorham, ME

DEVELOPMENT GOALS

The City's goal for the PTPD property is to create a forward thinking, low impact, environmentally friendly Technology Park development. The City reserves the right to review all development proposals for compliance with the Design and Energy/Environmental Standards listed below and to request changes and/or revisions to bring the design into conformance with the PTPD standards and goals.

Design Quality

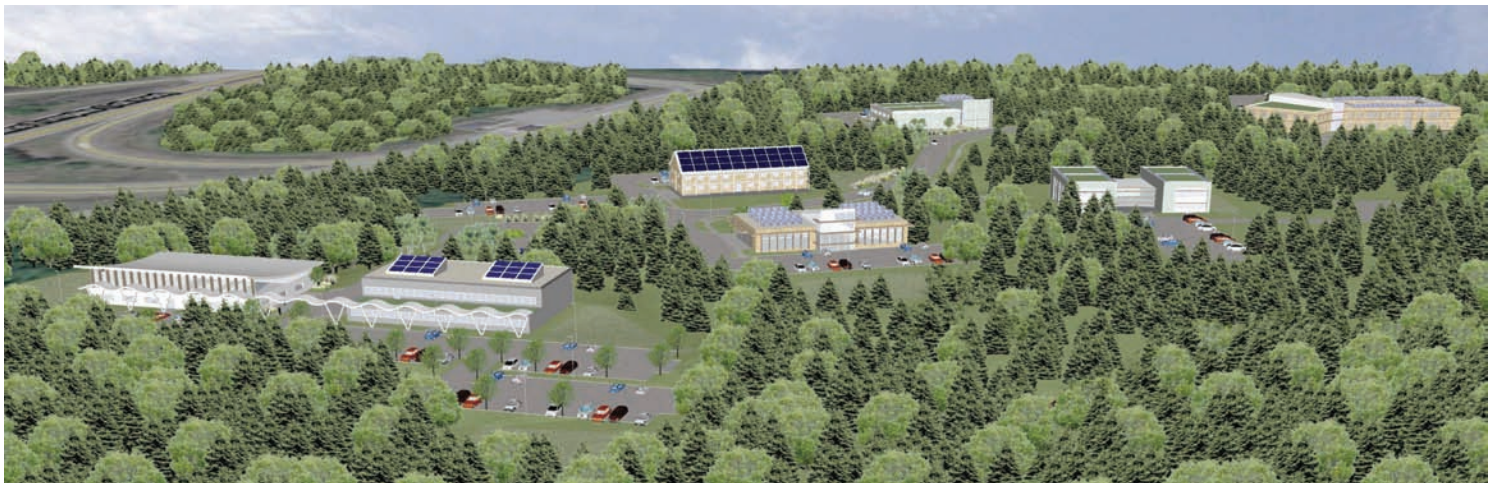
To achieve the City's goal they encourage proposals that are developed by innovative, well respected design professionals. All proposals for the PTPD unit areas shall be designed by an architect licensed to practice in the State of Maine. They shall include a complete set of drawings showing all exterior elements of the building, a colored rendering of the buildings exterior, and a sample board of the proposed exterior materials.

Durability

Development proposals for the PTPD unit areas shall be designed to last a minimum of 50 years without major repair or replacement. Materials shall be selected that have proven track record of performance in climates similar to that of Maine, that are attractive, durable, and easy to maintain.

Energy/Environmental Performance

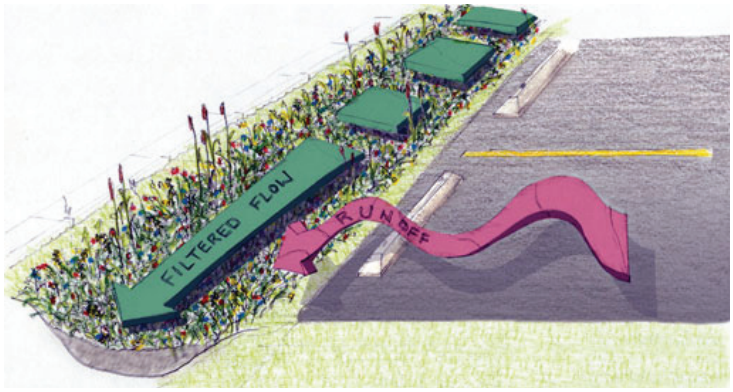
Development proposals for the PTPD unit areas shall be designed to achieve a minimum performance level that is consistent with the City's Green Building Code. Specific recommendations for performance are also outlined under Design Standards, below.



Rendering of the proposed development from the South with Rt 95 shown to the left. Buildings shown are only examples which meet the intent of the Design Guidelines, they are not actual proposed designs. Rendering by Scott Simons Architects.



Hoizontal sunshading reduces solar gain and planting softens and cools the hard surfaces of the pedestrian walkways and parking.



Parking lots will slope to gravel wetlands with open drainage channels. Image Courtesy of New York MTA.



Rendering of the PTPD looking south towards building unit area 4 and gravel wetlands on the right.

SITE DESIGN

Design Relationship to Site

Individual building developments shall demonstrate a reasonably unified design relative to other building developments and common areas within the park. Compatibility of design shall include such elements as building architecture and layout (see Building Design Standards), pedestrian and vehicular circulation plans, design of open spaces, drainage, topography, vegetation and preservation of natural features. Integration of open spaces and natural features may be achieved by incorporation of outdoor amenities for the benefit of users of the site, such as outdoor seating areas, trash and recycling receptacles, and interconnectivity with adjacent trail networks.

Stormwater Management and Site Design

Low impact stormwater management and site design shall seek to mimic the existing site hydrology by limiting piped infrastructure, limiting increases to the steepness of site grades, and maximizing surface stormwater conveyance and treatment through the use of gravel wetlands. Stormwater management design shall seek to maintain the natural wetland hydrology of the site through the addition of constructed gravel wetlands, underdrained soil filters, pervious roadway base (rock sandwich), and drainage channel protections. Stormwater management design shall consist of curb cuts with surface flow to sediment forebays, followed by gravel wetlands or underdrained soil filters in place of traditional closed drainage systems.

Stormwater management and site design shall limit disruption of natural hydrology by reducing impervious cover and managing stormwater runoff through a stormwater management plan focused on maintaining natural hydrology, treatment of the water quality volume (as defined by Maine DEP), and stream channel protection. Stormwater management design shall manage runoff rate from storm events which contribute to stream channel erosion, such as the 1 and 2 year, 24 hr rainfall events. The post development runoff rate will match the pre-development rate.

Site design, good housekeeping plans and site maintenance plans should consider reducing or eliminating sources of contaminants and reducing pollutants from stormwater runoff. Site design may seek to maintain surface hydrology through means of pervious layers below roadways, driveways or parking lots in lieu of traditional, closed pipe culverts, which channelize flow. Site design shall seek to avoid or minimize impacts to the natural, wooded wetlands that encompass much of the site. Site design should seek to implement pervious surfaces, be it by reducing paved areas or by utilizing pervious hardscape technologies (pervious pavements, pervious pavers).



Planted gravelwetlands along the road edge will serve to capture and filter runoff and the native trees and lanscape will be largely preserved.



Stormwater treatment wetland, Photo Courtesy of Stormwater Magazine.



Constructed wetland for stormwater treatment; Town of Acton, MA; design by Woodard & Curran Inc.

Materials or Wastes

No materials or wastes shall be deposited on any area of the site in such form or manner that they may be transferred beyond the lot boundaries by natural causes or forces. All stumps and debris generated by site clearing activities shall be utilized on site for temporary erosion control measures or immediately removed and reused offsite to the maximum possible extent. Building construction contractors shall develop a construction debris sorting and recycling plan. Building construction debris shall be recycled to the maximum extent practical.

Building tenants shall develop or implement existing recycling programs, and shall be responsible for contracting with a waste management service that provides recycling programs for paper, metal and plastic waste streams.

Building tenants shall develop and implement pollution prevention programs. Pollution prevention activities should include sweeping of paved areas (minimum of twice per year), minimization or elimination of the use of fertilizers, pesticides or herbicides on landscaped areas, strategic winter deicer use, and safe and sheltered outdoor material storage.

All material which might cause fumes or dust, or constitute a fire hazard if stored out-of-doors, shall be stored in enclosed containers.

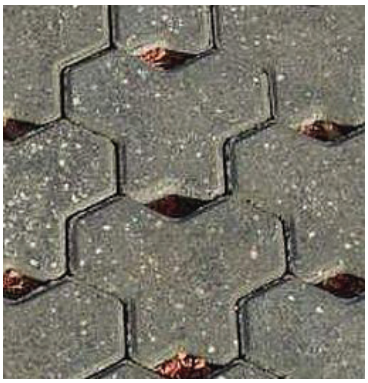
Soil Erosion and Sediment Control

Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation. This should be accomplished by following the erosion and sedimentation control plan developed for the overall site, in addition to the latest Maine DEP approved erosion and sediment control measures. Frequent, documented inspection of erosion and sediment control measures during construction shall be required in accordance with local and state regulations.

Traffic

Development proposals shall identify all proposed traffic controls (signage and striping), traffic-related pedestrian features, parking areas, and interior traffic circulation for each building site if the layout of the site differs from the permitted PTPD plan. A Traffic Movement Permit exists for the PTPD, and was based on an anticipated traffic generation for the full build-out of the permitted PTPD site. Development proposals shall modify the overall PTPD Traffic Movement Permit if the anticipated traffic generation numbers for any individual development site exceed the anticipated pro-rata share of the traffic forecast for the full site in the Traffic Movement Permit.





Examples of pervious pavers.



An example of acceptable light poles, furniture, sidewalks, and landscape design.

Parking Lots

Parking lots should be carefully integrated into the Development with respect to site access, building access and landscape qualities. Parking spaces should be designed to reduce impervious surface area as much as possible, and provide, where possible, preferred parking for low-emitting and fuel-efficient vehicles for 5% of the total vehicle parking capacity of the site. Confirmation via a parking analysis is required to justify the development of the maximum number and associated size (ranging from 8'-2" x 18' to 9' x 18') of parking spaces as approved and shown in the subdivision plat and overall site plan, which is different for each building unit but generally between 3-4 spaces/1,000 square feet of building area.

Reduce heat islands to minimize impact on microclimate and human and wildlife habitat. Consider providing any combination of the following strategies for 50% of the site hardscape (including roads, sidewalks, courtyards and parking lots): Shade (within 5 years of occupancy), paving materials with a solar reflective index (SRI) of at least 29 and/or open grid pavement system.

Sidewalks

Development proposals shall include internal sidewalks, illustrating the manner in which the developer will provide this amenity to take advantage of the topography and natural features of the site. Internal site sidewalks shall seek to limit impervious surface ratio while providing safe egress, maintaining appropriate desire line pathways, and enhancing building entrances, as applicable to each building development area. Design of sidewalks should consider use of pervious pavement products, such as pervious concrete or pervious pavers as they reduce sheet flow at the extremities of the parking lots by allowing rain to permeate the ground evenly across the walkway.



Rendering of the entry to the PTPD with building unit area 1 to the left, demonstrating the intent of the landscaping and sidewalks. The tall grasses and boulders to the right show the intended look of the proposed gravel wetlands. Rendering by Scott Simons Architects.



An example of subtle yet strong and beautiful lighting and signage.



Pedestrian walkways should be lit with bollard type fixtures (right) and parking areas should be lit with pole mounted down-lights (left).



Parking lot lighting should be pole mounted and shine in a downward direction.

Bicycle Racks

Encourage reduction in pollution and land development impacts from automobile use. It is required to provide bicycle parking in accordance with city standards. Shower and changing facilities in the building are encouraged.

EXTERIOR LIGHTING

Lighting strategies should seek to provide efficient , safe light levels, good color quality light, and minimal light pollution. Development proposals shall identify the location and style of lighting to be used in the development, and shall be accompanied by a lighting photometric plan in accordance with City Site Plan Review requirements. All roadway, driveway and parking areas shall be required to provide a light fixture of the same make, model, pole type and base design as the fixture chosen for the main access roadway (not selected at this time). Sizes can vary to accommodate specific use requirements.

All lighting fixtures shall be hooded or shielded so that the light shines downward. Efforts shall be made to minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction and reduce development impact on nocturnal environments. The use of low energy or LED fixtures is encouraged. Light color should be uniform. The use of high pressure sodium lights is not allowed. All exterior lighting shall conform to the Site Lighting Standards of the City of Portland Technical Manual.

Light fixtures associated with the building and walkways should be of a style and height that enhance the architectural character of the buildings. Illumination of parking lots with large flood lights mounted on the building is not allowed; small, pole mounted fixtures along the edges of the lots are encouraged, and taller pole mounted fixtures will be allowed provided they meet the applicable standards of the City of Portland's Technical Manual. The objective is to provide a more even illumination, less glare, more security, and be more in scale with the desired character of the PTP Campus.

Pedestrian pathways should be illuminated with lamp post or bollard type light fixtures, of a scale and character in keeping with the size of the pathways they are serving.

Entrance way lighting should develop in a hierarchical way, with primary entrances receiving higher quality and quantity of illumination, to reflect their relative importance.

Landscape lighting can be developed to supplement other lighting, and can enhance the character of the PTP Campus. Overall, the exterior lighting should enhance the architecture and the landscaped environment, be placed in an orderly way throughout the Development to reinforce the building and pathway patterns, and harmonize with other signage and site furniture to contribute





Examples of acceptable signage.



An example of a parking lot which is integrated into the landscape. The use of grass lawns is discouraged, however.



Rendering of the PTPD looking towards building unit areas 6 and 7 with gravel wetlands in the foreground. Rendering by Scott Simons Architects.

to the desired appearance of the PTP campus. It should help attain a safe, attractively illuminated nighttime environment that complements the appeal of the daytime environment.

SIGNAGE

Development proposals shall identify all proposed signage. Signs shall be designed in proportion and constructed of permanent materials and shall be coordinated with the building and landscaping design through the use of appropriate materials and finishes. Well-designed signage is encouraged in the Development, both in front of the building and on the building, as allowed by the City's existing ordinances. The use of raised metal letters, individual metal letters, and etched masonry or wood is encouraged; surface mounted plastic letters and interior-lit box signs are not allowed. Signs should be illuminated at night either from behind the raised lettering or with focused floodlights.

LANDSCAPING

Development proposals shall include a landscaping plan and maintenance program developed by a licensed Landscape Architect in the State of Maine. The landscaping plan shall be developed in conformance with the landscaping and landscape preservation standards outlined in the City's Technical Manual and Land Use Ordinance. All developed land areas not covered by structures, parking areas or circulation facilities shall be landscaped and maintained. In order to soften the visual impact of large expanses of pavement in parking lots, vegetation shall be planted or retained where feasible on islands or planting strips. Each building development is encouraged to provide vegetation within the developed areas of their site matching to and blending with the natural woodland features of the adjacent, undeveloped areas.

Maintained lawn areas and non-native tree and plant species are discouraged. Mulched and planted areas, wildflower and conservation mix grasses and native plant and tree species are encouraged. The use of low water demand plantings is encouraged, so far as they are sited properly and can thrive in the soils and site conditions of the property. Further, each parking area shall be required to provide landscaping as outlined the City of Portland's Code of Ordinances.

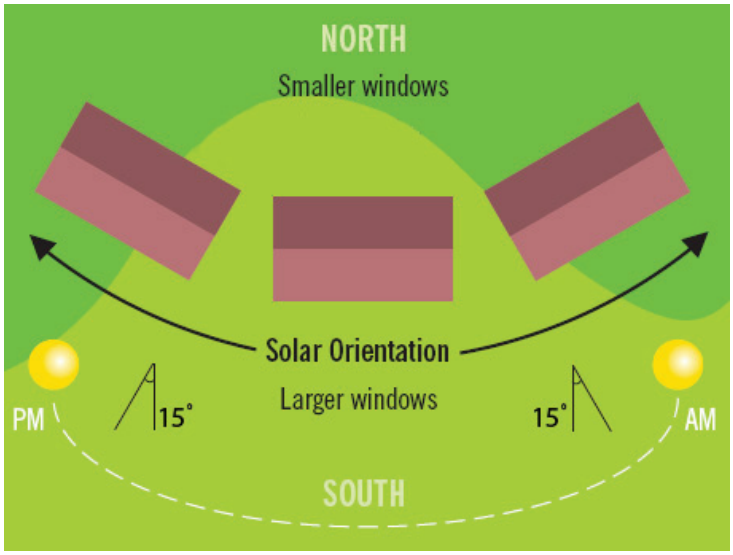
If maintained lawn areas are desired, these areas should be managed in a way to maximize soil and turf health. Lawn management should follow the guidance of the Maine Yardscaping partnership (http://www.yardscaping.org/).



Cascon Headquarters by Scott Simons Architects in Yarmouth, ME



This type of office building is discouraged in the modern PTPD. It is a poor reference to classical architectural forms and motifs which have little to do with the function of the building or contemporary architecture.



Proper solar orientation with the long side of the building facing south allows for solar gain in the winter months and opportunities for sun-shading on the south side in the summer.

BUILDING DESIGN STANDARDS

Building Massing and Form

The Master Plan envisions a series of one story and two story buildings developed along a curving roadway, as illustrated in the Site Plan, with natural, open space between them. All buildings should be oriented within 15 degrees of true south, to maximize their solar orientation. Rectangular footprints are encouraged, with the long sides of the rectangle facing south to maximize the opportunities for solar shading and passive solar heat gain.

Simple building forms of a contemporary style are envisioned, that sit calmly on their sites that will foster a cohesive setting for the campus. Natural colors and materials are encouraged as in the above example of the Cascon Headquarters which has a vernacular form with modern fenestration and details. It is a simple, strong volume with thoughtful detailing to control water, snow and sun. Tacked on architectural features used to mimic an architectural style such as the example to the left is discouraged. It is a poor reference to classical architectural forms and motifs which have little to do with the function of the building or to contemporary architecture.

Zoning Standards

Each building site shall meet the zoning requirements as identified within the Office Park Zone, Chapter 14 – Land Use, in the City of Portland City Code of Ordinance. Buildings shall not be greater than 55 feet in height; front yard (50'), side yard (25') and rear yard (50') setbacks between a building structure and the property line of the overall site parcel shall be maintained; pavement setbacks (15') between paved surfaces and the property line of the overall site parcel shall be maintained; a minimum number of parking spaces of 2.5/1,000 sf of building space shall be provided. The parking requirement may be waived upon review and approval by the planning authority if the building tenant can demonstrate that an alternate parking demand is anticipated for a particular building use. Reduction of paved parking areas is encouraged. See Parking Lots section of this document for further information.



The Chestnut Street Lofts in Portland by TFH Architects blends corrugated metal cladding with rich masonry for a high quality exterior envelope. Careful detailing is essential to make this successful. Note calm and cohesive color palette.



The use of split face CMU such as in this generic building is not allowed. Note lack of relationship to the local climate and built environment.



JSA Architects' entrance to the Maine Med building successfully attracts visitors to its entrance and allows you to experience the interior from the sidewalk. Patterning within the masonry and a blend of metal and glass give the modern entry distinction.

BUILDING ENVELOPE

Exterior Siding

A wide variety of exterior siding materials is acceptable within the development. The goal of the Master Plan is to achieve an overall sense of continuity, quality, and durability, as well as innovation. The use of modern and "high tech" materials is encouraged, provided they are well designed and detailed. Exterior wall assemblies must meet or exceed the Maine Uniform Building and Energy Code.

Brick is a classic exterior building material in New England and can be used for the buildings in the PTP Development. Other masonry products in contrasting or non-contrasting colors or textures, such as precast concrete, granite, terra cotta tiles, etc. may also be used either in conjunction with brick or as the primary exterior material. Exposed concrete block and split faced concrete block is not allowed.

Metal (Alucabond, Alpolic or equivalent) and synthetic (Trespa or equivalent) wall Panels and fiber cement siding (Hardiplank, Cemplank or equivalent) are acceptable for the exterior siding material, provided they meet the durability goals of the Development. These materials are frequently used as a "rain screen", which is encouraged in the Development. Corrugated metal panels (PacClad or equivalent) are also acceptable, provided they are used in a way that does not make the buildings appear to be "industrial". Metal trim, copings, fascias, etc. are acceptable, provided the character and colors are compatible with the exterior siding material(s) and in keeping with the intent of the Master Plan.

The use of wood siding is acceptable provided it is properly treated for long-term durability. The use of painted wood siding is discouraged, because of its maintenance requirements. Vinyl siding may not be used.

High performance glass "curtainwalls" and/or "storefront" systems can be used as an exterior siding material, provided they exceed the Maine Uniform Building and Energy Code by 10%.

Windows

Minimum standards include double glazed high performance windows, with an all-window R-value which meets or exceeds the Energy Code (current code is 0.35 U-factor). High performance, double glass wall construction is encouraged, as are other innovative ways of using glass that achieve these performance goals.

Exterior window finishes can be aluminum, fiberglass, natural wood (provided they have a durable finish), and painted steel. Window frames shall be thermally broken for increased R value. Solid vinyl windows are not allowed. Highly reflective or mirrored glass may not be used. Visible Light Transmittance is encouraged to be 72% or better.



Natural wood siding can provide a great sense of warmth in combination with metal roofs, structure and sun shades. A dynamic and beautiful landscape grounds the building and enlivens the pedestrian edge. -Cascon Headquarters in Yarmouth, ME by Scott Simons Architects





The Design Guidelines encourage green roofs such as these examples in Portland. Left: Bayside Apartment Building. Right: East End School by Stephen Blatt Architects.



Flashing and trim details should have clean lines and carefully articulated edges. -Waynflete School Arts Center by Scott Simons Architects.

Horizontal sunshades or overhangs are recommended to cover 75% of the windows on the south exposure of the building. The exterior sun control devices should prevent direct sun penetration at noon during July and August. Vertical sunshades are encouraged on the west exposure to control solar heat gain during July and August. Properly designed shading devices will allow the sun to enter during the winter months and block the sun during the hottest months.

Entrances

Entrances must be visible from the street or entrance drive to the property. Covered entrances are required to provide a transition into the building from the rain, snow and wind. Roof canopies, roof projections, and/or recessed doors are encouraged; vestibules with inner and outer sets of doors are strongly recommended, to manage heat loss at the entrance. Walk-off mats or grills are recommended in the vestibule to reduce the amount of dirt and moisture brought into the building.

Roofs

Roofs may be sloped or flat. Flat roofs should be single ply membrane type with a minimum pitch of 1/4 inch per foot. Pitched roofs must be minimum 25 year, "architectural grade" fiberglass shingles, or a standing seam metal roof or another equally durable material which meets the design goals of the Development.

As a means to reduce the "heat island effect" and reduce cooling loads, roofing material is encouraged to have a Solar Reflective Index (SRI) of minimum 29 where the pitch is greater than 2:12. Where the roof is less than or equal to a 2:12 pitch, it is encouraged to be SRI 78 or better. "Green roofs" are encouraged, to help manage stormwater run-off from the roof and reduce "heat island effect".

Exterior Trim and Detailing

Exterior trim shall be designed to complement the exterior siding of the building. Masonry, metal, wood and synthetic materials may be used provided they are well detailed, durable, and appropriate for the development. Drip edges, copings, flashings, and other metal trim pieces associated with the roofs should be the same finish and color as the metal roofing material so as to appear as a cohesive element.



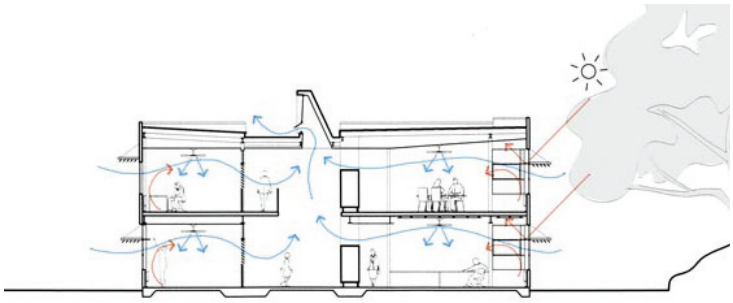
Photovoltaics at Portland's East End School. -Stephen Blatt Architects



Spray foam insulation creates a tight thermal envelope with minimal air leakage.



Waterless urinals significantly reduce water use.





An office building example in Auckland, NZ by Architectus uses operable windows and solar shading devices to naturally control the indor air quality.

ENERGY & ENVIRONMENTAL STANDARDS

The goal for the Development is to encourage innovation, high quality, and high performance in all the buildings built in the PTP Campus. To achieve their energy objectives, the City has established a Green Building Code. They also encourage innovative proposals that will help make the campus a leader in sustainable development.

Building Materials

The use of environmentally friendly products in the design and construction of all buildings in the Development is encouraged. Building materials shall be selected to insure the use of products with the lowest environmental impact, wherever possible. Life cycle cost data, highest possible recycled material content, readily renewable resources (bamboo, wheat board, etc.), locally sourced materials, lowest VOC rating, highest energy efficiency, and other factors shall be analyzed in all recommendations for the selection of materials and systems for all buildings in the Development. Materials shall conform to the standards set forth in the Maine Uniform Building and Energy Code.

Exterior Envelope Thermal Performance

Wall and roof assemblies shall meet or exceed the Maine Uniform Building and Energy Code. It is recommended that roof assemblies be a minimum of R-49 (Code: R-38) and wall assemblies be R-30 (Code: R-21) or greater.

Water Conservation

The use of dual flush toilets, ultra low flow or waterless urinals, motion sensors for all faucets, and other water saving features are recommended. The use of graywater and rain water harvesting for irrigation and toilet flushing is encouraged. This will reduce the long term utility costs to the owner and the impact on the public water and sewer systems.

Shading Devices and Ventilation

Solar shading devices are encouraged on a minimum of 75% of south facing windows. See section "Windows" on pages 11 and 12 for further requirements. Solar shading devices and operable windows allow views and natural ventilation while keeping the sun's heat at bay. Providing a way for built-up hot air to escape at the top of the building allows for a "stack effect" to occur, bringing in fresh air from the windows and allowing the heated air to flow upwards and out the vent or operable window. These techniques foster a healthy and comfortable work environment with minimal heating and cooling loads. See adjacent diagram and examples.



Appropriate natural daylighting significantly reduces the need for lighting and its associated energy consumption which lowers operational costs. -Rare Headquarters in England by Feilden Clegg Bradley Studios

Lighting

Lighting electrical loads account for approximately 25% of the energy use of commercial buildings. Careful attention to reducing the watts/SF of development will go a long way towards reducing overall energy consumption. Appropriate use of natural daylighting and occupancy sensors can significantly reduce electrical loads.

The use of energy efficient LED and/or florescent light fixtures is highly recommended, not only to meet the State's energy code but to meet the goals of the PTP Campus.

Mechanical Systems

The mechanical systems shall be designed to minimize energy consumption and maximize human comfort throughout the range of operating conditions. While the most important part of energy conservation comes in a well insulated and tightly sealed building envelope, the design of the HVAC system is critical to meeting these goals and the City's Green Building Code.

Alternative Energy

Renewable energy use is encouraged as a means to decrease the use of fossil fuels and the release of harmful gasses and toxins into the environment. Many systems have a short pay-back time line and will significantly decrease the annual operating budget of the building. The use of photo-voltaic cell arrays to power the building is encouraged, both on the building and remotely located from the building as site constraints allow. The use of solar hot water roof panels is also encouraged, to generate hot water for use in the building. Rooftop mounted panels are acceptable.



Rooftop photovoltaics can offset the building's energy consumption and put energy back into the grid. -NASA Sustainability Base by McDonough + Partners

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN PRINCIPLES

Development proposals shall be designed incorporating Crime Prevention Through Environmental Design (CPTED) principles, as outlined in the City's Technical Manual. Development proposals shall create formal and informal natural surveillance networks on the site to increase on-site visibility and the safety of legitimate users and to deter potential offenders.

Physical Features

The placement and design of physical features shall maximize visibility to allow for surveillance opportunities to and from site features such as entrances and exits, walkways, assembly areas, corridors, stairways, windows, parking lots, landscaping, fences or walls, and any other physical attributes.

Lighting

The lighting of the site and building shall meet the lighting guidelines of this document, the City's technical standards for site lighting, and shall enable users to observe movement and activities on the site during the day and at night. Motion sensor activated lighting is permitted to provide adequate illumination of the site at night while still complying with applicable lighting curfew standards. Specifically, the lighting plan should satisfy the following criteria:

Create nighttime illumination of pedestrian travel paths and gathering areas, entrances and exits, and parking lots by achieving the following:

- Provide a clear view of an area from a distance and enable anyone moving in or immediately around it to be easily seen.
- Deny potential hiding spaces adjacent to existing and proposed pedestrian travel routes.
- Permit facial identification at a distance of at least 30' and create the perception of being identified.

Mechanical Surveillance Systems

If necessary, mechanical surveillance systems such as CCTV may be installed to monitor areas not easily observed such as parking lots and garages.

Access Management

Development proposals shall be designed to provide visible pathways and to offer proper guidance for legitimate users to access the site and to discourage unauthorized use of the site.

Orientation and Wayfinding

Development proposals shall be designed so that the layout, features and/or signage clearly guide the movement of vehicles and pedestrians along safe and predictable paths both during the daytime and nighttime. Specifically, the development proposals shall satisfy the following criteria:

- Placement of signage, lighting fixtures, landmarks, and landscape design features shall clearly guide users to and from the facility.
- Site features shall be designed to avoid the creation of entrapment zones that afford users no opportunity to escape or retreat from an approaching hazard.

Mechanical Access Control

If necessary, mechanical access control systems may be implemented such as assigning personnel at key building entry points or establishing other procedures such as mechanical auto closing devices, key cards, gates and other locking devices.

Territorial Reinforcement

Proposed developments shall be designed to clearly delineate private, semi-private, and public space.

Planning and Urban Development Department
Planning Division

Subject: PTP Design Review – Patrons Oxford

Written by: Caitlin Cameron, Urban Designer

Date of Review: Wednesday, November 25, 2015

The proposed new construction of a commercial office in the Portland Technology Park was reviewed according to the *Portland Technology Park Design Guidelines*. The project was reviewed by Caitlin Cameron, Urban Designer, Jean Fraser, Planner, and Shukria Wiar, Planner.

Findings of the Design Review:

The Technology Park Guidelines expresses the following goals for new development projects:

- Design Quality
- Durability
- Energy/Environmental Performance

The proposal for Patrons Oxford Offices is a contemporary design that conveys an identity of innovation and technology. Several energy and environmental performance strategies are integrated with the building design including roof forms to maximize photovoltaics, building orientation for passive solar, low-e windows, and a light colored roof to reduce heat island effect. The project meets the overall goals of the Portland Technology Park Design Guidelines but there are some outstanding items below regarding specific standards.

Design Review Comments *(red text denotes standards that are not met or additional information needed)**:***

PTP Portland Technology Park- Site Design Standards

Signage – Not Met, more information needed – The sign master plan shows three signs as part of the project. The size and proportion of signs is appropriate for the site and building. The sign materials are listed as TBD and cannot be evaluated. The letters are indicated as metal and meet the standards. The Lighting section prohibits up-lighting – the lighting on the building sign should shine downward. The freestanding and door signs meet the lighting standards using floodlights and downlights. It appears the large building sign will be visible to the drive approach. The review panel questions whether the large building sign could potentially be placed higher on the façade. A condition of approval may be sought to resolve the sign material finish and durability to ensure the design standards are met.

The Division 22 Sign Ordinance requirements will need to be met at the time of sign permit application. In the OP zone, 1 building sign is allowed at 6% maximum of the wall area. One freestanding sign is allowed with a maximum 15sf, 5' height, and 5' setback. It is not clear

whether the building may have 3 wall signs as indicated in the current proposal. Location of the freestanding monument sign appears to cross the property line - applicant should refer to the condominium documents and Division 22 Sign Ordinance for sign location compliance.

A waiver from the sign ordinance requirements can be recommended by the Planning Board and in this case staff feels the proposed building signs are appropriate for addressing different points of access and approach orientations of the building. For example, the large building sign is oriented to the vehicular approach and the two small building signs at the entrances are for the pedestrian approach to the doors. The placement of the freestanding sign is appropriate from a visibility standpoint and as long as it is not in violation of the condominium documents.

PTP Portland Technology Park- Building Design Standards

Building Massing and Form – Met – The proposed building is two stories with the long dimension oriented South. The form is a modified rectangle and the overall design is contemporary in style. Architecture provides an integrated design. Wood screens are incorporated to address the preference for natural colors and materials. The roof line is varied and will potentially provide visual interest to the highway approach.

Zoning Standards – Met – Building is proposed to be two stories with pavement setbacks.

Building Envelope

- **Exterior Siding** – Met – The proposed materials meet the standard for continuity, quality, and durability and convey a "high tech" quality. Materials include Fiber cement board, storefront, metal siding, and wood siding. No vinyl or masonry block is proposed. The review panel expressed the desire to see the vertical wood screen elements be integrated down to the ground floor if possible to provide a cohesive design element. The storefront system exceeds MUBEC by 17% in performance (10% is required).

- **Windows** – Met – Exterior window finishes appear to meet the standard.
    - Window Transparency – Met – glass will not be reflective and will meet the requested level of transparency at VLT 70.
    - Passive Solar - Sun shades are recommended to cover 75% of the windows on the South exposure. There is an overhang on the ground level to provide the exterior shading, but no shades or overhangs proposed on the second floor. The second floor will control solar exposure through the combination of high performance glass and

- **Entrances** – Met – The entrance faces the entry drive and includes a vestibule as recommended by the standard. A covered entrance is required to provide a transition into the building and is provided with a 10' overhang. The entrance is also demarcated by three columns.

- **Roofs** – Met – flat and sloped roofs are permitted. The project uses a light-colored roof to reduce Heat Island Effect as required by the standard.

- **Exterior Trim and Detailing** – Met – Metal trim details proposed to match siding finish. Wood screens are proposed as a natural material detail.

Planning and Urban Development Department
Planning Division

Subject: PTP Design Review – Patrons Oxford

Written by: Caitlin Cameron, Urban Designer

Date of Review: Friday, October 30, 2015 updated 11.4.2015

The proposed new construction of a commercial office in the Portland Technology Park was reviewed according to the *Portland Technology Park Design Guidelines*. The project was reviewed by Caitlin Cameron, Urban Designer, Jean Fraser, Planner, and Shukria Wiar, Planner.

Findings of the Design Review:

The Technology Park Guidelines expresses the following goals for new development projects:

- Design Quality
- Durability
- Energy/Environmental Performance

The proposal for Patrons Oxford Offices is a contemporary design that conveys an identity of innovation and technology. Several energy and environmental performance strategies are integrated with the building design including roof forms to maximize photovoltaics, building orientation for passive solar, low-e windows, and a light colored roof to reduce heat island effect. The project meets the overall goals of the Portland Technology Park Design Guidelines but there are some outstanding items below regarding specific standards.

Design Review Comments *(red text denotes standards that are not met or additional information needed)**:***

PTP Portland Technology Park- Site Design Standards

Signage – Met, more information needed – The sign master plan shows three signs as part of the project. The letters will be metal as recommended in the standards and will be lit either from behind or with side lights. Exact placement of the monument and building sign is not currently indicated. It appears the large building sign will be visible to the drive approach. The review panel questions whether the large building sign could potentially be placed higher on the façade. Signs do not include dimensional information and cannot be reviewed according to the Sign Ordinance requirements at this time – this information will be needed at time of sign permit application.

PTP Portland Technology Park- Building Design Standards

Building Massing and Form – Met – The proposed building is two stories with the long dimension oriented South. The form is a modified rectangle and the overall design is

contemporary in style. Architecture provides an integrated design. Wood screens are incorporated to address the preference for natural colors and materials. The roof line is varied and will potentially provide visual interest to the highway approach.

Zoning Standards – Met – Building is proposed to be two stories with pavement setbacks.

Building Envelope

- **Exterior Siding** – Met – The proposed materials meet the standard for continuity, quality, and durability and convey a "high tech" quality. Materials include Fiber cement board, storefront, metal siding, and wood siding. No vinyl or masonry block is proposed. The review panel expressed the desire to see the vertical wood screen elements be integrated down to the ground floor if possible to provide a cohesive design element. The storefront system exceeds MUBEC by 17% in performance (10% is required).

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- **Exterior Trim and Detailing** – Met – Metal trim details proposed to match siding finish. Wood screens are proposed as a natural material detail.

From: Jeff Tarling
To: Jean Fraser
Date: 11/4/2015 4:09 PM
Subject: TECH PARK

Jean -

In review of the Oxford offices at the Portland Tech Park the overall landscape plan or theme appears to be exactly as envisioned in the original guidelines. Good use of native plants, thoughtful layout of building, drives & parking (circulation). The landscape plan deserves an "A" for integrating the Tech Park design concepts matching the challenges of nearby wetlands and natural areas.

"Tree Save" areas - field inspection is needed to better comment on Parking Lot #1 area. Additional 'tree save' comment will be forwarded for this section.

Thanks,

Jeff Tarling

STI # 15434

Review Memorandum

TO: **Jean Fraser –City of Portland -Planner**

FROM: **James Seymour, P.E.**
Development Engineering Review Consultant
Sebago Technics, Inc.

DATE: **December 3, 2015**

RE: **Final Site Plan Review –**
Proposed Patrons Oxford Insurance Building
Unit 4-Technology Park, Portland Maine

We have reviewed the submitted Final Site Development Plans as requested for the Proposed Patrons Oxford Insurance Building planned on a commercial lot located off Technology Park Drive. The site is located in the O-P Office Park Zone as part of a Planned Unit Development originally approved in 2012. We have been requested to review the plan and application to assess whether it has met the City of Portland site plan requirements relating to stormwater management and surface runoff for the Development Unit #4, for the proposed 19,000 SF Patron Oxford insurance building and associated parking. Based on discussion with Planning Staff this is part of a larger Site Location of Development Application being concurrently reviewed by the Maine Department of Environmental Protection (Maine DEP). The overall site plan has had some recently relatively minor adjustments and revisions to the road and stormwater treatment areas these are best handled by the DEP as a separate amendment and as part of the grand view of the entire office park application, and our focus will be on the Unit 4 development itself. Our review is based on latest plans submitted to the City of Portland on 11/20/15 and follows the city requirements for stormwater management only.

We received a copy of the revised Site Development Plans, and cover letter for addressing the staffs review comments of the initial application from Woodard and Curran. We had met with the design engineering team of Woodard and Curran, and reduced our inquiries down to a few basic items focused on engineering details, added note requests, and tables to assist the City for future understanding of the roadside gravel wetland systems. Specifically we wished to know what future development areas are accounted for with the two gravel wetlands located near this unit. We will need to review the stormwater watershed plans and drainage areas summaries to verify how to assess each treatment measure.

Following the last Planning Board workshop review, we had a few concerns and topics narrowed down and understood that the comments raised in our Nov 5 memo could be addressed. ,At the time of this memo, we still feel some are not clearly addressed, or we have discovered other minor items which can be revised as part of a conditional approval is so warranted.

We have divided our review into Stormwater Treatment /Management, Construction Management, and Site Grading activities as they relate to stormwater management, point discharge, or as associated with construction of a site drainage feature.

Stormwater Treatment:

The Maine DEP and City of Portland uses the same Stormwater BMPs which require that the engineering design consider infiltration or filtration of runoff through the use of measures such as gravel wetponds. The current design does incorporate treatment of the parking and building area's runoff impacts by use of gravel wetlands. A concern we have raised is that during large rain events that the modelling has consistently shown that, (again due to the limitations of flat topography, and poor wet soils) that there is little drainage relief across the site. The site will experience temporary flooding which in larger events will back flows up or near parking areas or pedestrian access areas. We are not opposed to the design as long as considerations are made to address the saturation of soils and flooding elevations with the design to improve site base materials. Again the overall project (subdivision and road design) will be reviewed by the Maine DEP, and the site has provided acceptable treatment from impervious areas through use of gravel wetlands (labelled pond 4 and 8).

We had requested that either table's specific to the design of Unit #4 be added to the plans or in separate submission such that we can track and follow the impacts on a lot basis. We have not received those tables and labelling to confirm the development impervious area distributions.
The following items listed below are items we feel need to be addressed:

1. The previous granite pedestrian walkway has been replaced with a Stormwater crossing. We feel that the 6 inch diameter pipes to handle surface flows will be problematic for winter icing and material clogging (leaves, grasses, etc). We also will need to observe that the runoff generated by the parking and sidewalk areas will have the ability to be passed by the smaller pipes.
2. And, the concrete detail for the walkway will need to add geotextile, and gravel sand to pour the walk in place. A precast shall box culvert or short concrete plank span may be more reasonable then cast in place.
3. Calculations shall be provided for the gravel wetland emergency spillways since they are not shown to be constructed with riprap stone for erosion protection, and where it is a moderately sized area of watershed and impervious area contribution we should verify exit flow velocities.
4. The riprap aprons shown in details call for a d50 of 12inches which appears excessive. And the DEP recommendation is for 2.25 times the depth to D50 size. Most of the pipe outfalls are underdrains or smaller piping, so this sizing should be modified using smaller average stone size.
5. Per the geotechnical report recommendations the drip edge detail taking surface water from the roof or grounds should not utilize the foundation drain. The layout shows an offset of the drain from the drip edge. The engineer shall clarify how the two will be

sized or interact. Does the pipe in that section need to be larger, and what impact will that have on a smaller 4 inch pvc drain?

6. The parking lot underdrains have no slope and would be set with level pipes. Given the smaller 4 inch size it is likely that they will not function or convey groundwater to an outlet location, and would likely have sags leading to essentially no flow. Or plugging potentially creating excessive prolonged drawdown time.
7. The main underdrain outlet will have conflict with the gravel wetland spillway, and based on fill over the outlet pipe could create additional wetland fill impacts.
8. Additional cleanouts would be needed at 90 degree connections of all underdrains if below normal slope installation standards (less than 0.005) and or between pipe lengths exceeding 300 feet in length.
9. All plans should note that all excavation and dewatering shall follow recommendations by the R.W. Gillespie Geotechnical engineering report.
10. All other agency conditions relating to the Stormwater Mangement or development permits relating to the entire development, shall note permit numbers, and recent dates of approval for all State and Federal permits acquired, to be included on the appropriate drainage plan or drawings for reference.

Construction Management Plan:

We have asked for more details regarding dewatering or standard pumping of groundwater will be necessary to construct foundations or utilities. The impact is that this creates dirty sediment filled discharges. Thereby it will be imperative that we have a site specific construction management plans to assess all environmental point discharged flows that could be raised during this project's site construction. Items will need to include dewatering measures, discharge locations, specific erosion and sedimentation measures, excavated soil stockpiling locations, and include efforts for maintaining cleared streets by sweeping during construction activities (truck tracking). We recommend that notes relating to dewatering outfall locations shall be reviewed by the site engineer and city inspectors/ engineers prior to installation, and that all procedures shall follow the geotechnical recommendations or as directed by the Site Engineer.

General Site Plan Grading Revisions:

Given a site plan dealing with near level grading, and the joint stormwater treatment measures being shared with the overall development as part of a larger Maine DEP development, we will be suggestion some minor revisions or surface grading and adding notes for clarity of tracking responsibilities, and to asses Unit #4 independently. We had discussed a few areas of grading problems with the applicant and they were considering minor revisions by small plan or grade changes, or by adding additional notes for clarity. In particular we will looked at pedestrian access elevations, general grading. Grades are still relatively flat and may create ponding on paths during winter conditions, especially when planting beds and mulch are added. It may be beneficial to add a few yard drains or addition underdrains to convey runoff out of the western side areas.to assist with near levels areas susceptible to surface ponding or icing.

Summary:

We understand the projects intent, incorporation of drainage treatment measures to improve water quality impacts from paved surfaces. We feel most of the discussed concerns can be incorporated into the final design with conditions, which will could be recommended by the City Planning Staff if appropriate, and decided by the Planning Board as part of their decision. Our review is only consideration of the impacts from surface runoff and stormwater management of the site. Due to the limitations of surface topography, and challenged by existing high groundwater and poor soils, the design does address in general, the requirements for runoff quantity and quality with use of filtration measures and gravel wetponds. The applicant has requested a waiver of the standard that requires treated runoff to be released over a 48 hour period, and we support the waiver, as the design implements a drawdown time which just slightly exceeds this time requirement per best management practices.

The stormwater management design in general conforms to the Maine DEP Chapter 500 General Standards as required per the City of Portland Technical Standards and follows the Site Plan – Stormwater Management requirements. With submittal and review of the requested additional materials or plan modifications, the project may be approved.

Please feel free to contact me if you or the design-professional have questions with our comments or concerns. We look forward to assisting the City and applicant to work through the final design components associated with this important project development within the City of Portland's Technology Park..

Sincerely;

James R. Seymour P.E
Consulting Review Engineer

JRS:jrs

From: Tom Errico <thomas.errico@tylin.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>
Date: 11/19/2015 10:57 AM
Subject: Portland Technology Park Office Building - TDM Plan

Jean - The applicant has provided a summary of the general Transportation Demand Management (TDM) Plan for the entire site and should provide specific details for the proposed office building. I would suggest the applicant address the following as outlined in the general plan.

* TDM Coordinator - The applicant shall identify a TDM Coordinator.

* Employee Survey - This shall be conducted within 6 months of occupancy and used for refinement of the TDM Plan.

* Parking and Trip Reduction Target - The applicant is not suggesting a target at this time. I will continue to review this and offer possible suggestions in the future.

* Parking Trip Reduction Strategies

  - o Education - The information noted in the general TDM Plan should be applied to the proposed Office Building.

  - o Flexible Hours - The applicant should note whether this strategy is being implemented or considered.

  - o METRO - The applicant should note if incentives will be provided to employees.

  - o Bicycle Use - In addition to the noted bicycle rack adequacy monitoring, other strategies that could be considered (although not required) include shower and changing facilities and indoor bicycle storage facilities.

  - o Sidewalk Facilities - I concur that pedestrian facilities between Rand Road and the proposed building are provided.

  - o Monitoring - As noted, an annual TDM report shall be provided noting the results of the Trip Reduction Strategies.

  - o Incentives - Additional detail should be provided. As an example the plan should consider designating a van/car pool parking space and whether Metro incentives will be provided.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
[T.Y. Lin International]T.Y. Lin International
12 Northbrook Drive
Falmouth, ME 04105
207.781.4721 (main)
207.347.4354 (direct)
207.400.0719 (mobile)
207.781.4753 (fax)
thomas.errico@tylin.com<mailto:thomas.errico@tylin.com>

From: Tom Errico <thomas.errico@tylin.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>
Date: 12/3/2015 10:16 AM
Subject: Portland Technology Park - Final Traffic Comments

Jean - I have reviewed the revised plans and information and I find the project to be acceptable from a traffic perspective with the following comments.

* I find the revised TDM Plan to be reasonable and acceptable. It is my understanding that the applicant has agreed to designate car/van pool parking spaces and the plans will need to be revised to account for this.

* There have been discussions regarding reducing the width of the 24-foot circulation lane to 20 feet south of the generator. I would find this change to be acceptable.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
[T.Y. Lin International]T.Y. Lin International
12 Northbrook Drive
Falmouth, ME 04105
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207.347.4354 (direct)
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thomas.errico@tylin.com<mailto:thomas.errico@tylin.com>

From: Tom Errico <thomas.errico@tylin.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Jeremiah Bartlett <JBartle...
Date: 11/5/2015 11:38 AM
Subject: Portland Technology Park LCE 4 - Preliminary Traffic Comments

Jean - I have reviewed the application materials and offer the following preliminary traffic comments.

* I have reviewed the trip generation analysis conducted by Gorrill-Palmer and concur that the proposed project complies with the Traffic Movement Permit and a traffic study is not required.

* I have reviewed the parking study and find it to be acceptable. Given employee information and data from the ITE Parking Generation Manual, a sufficient parking supply will be provided.

* The site plan should account for likely origin/destination patterns of pedestrians when walking between the main parking lot and the entry. I would suggest a more direct pedestrian facility be provided.

* The applicant should provide supporting documentation on the need for the channelization island at the driveway intersection with the main entry roadway.

* The vehicle turnaround at the end of the parking lot can be modified to reduce pavement area.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
[T.Y. Lin International]T.Y. Lin International
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DRIVE RESULTS

41 Hutchins Drive
Portland, Maine 04102
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

Att. A

October 5, 2015

Jean Fraser, Planner
City of Portland Planning Office
389 Congress Street
Portland, ME 04101

Re: Portland Technology Park
Subdivision Amendment

Dear Jean:

On behalf of the City of Portland, we are submitting an application for an amendment to the Subdivision Plat for the Portland Technology Park Condominium located on Rand Road in Portland Maine. It is our understanding that the fee for this amendment is $500, however as the applicant is the City of Portland, the fee is waived. This application includes the amended plat. For all other materials in support of the associated changes, please see the Level III Site Plan application that has been submitted separately.

The Plat for the Technology Park was first approved on January 24, 2012, recorded on October 10, 2012, and the first amendment was approved on March 10, 2015. This amendment added a 20-foot wide Unitil gas line easement through a portion of the Technology Park. A copy of this most recent amended plat is attached for reference. At this time, the only portion of the Technology Park that has been constructed is approximately 950 linear feet of roadway.

A Purchase and Sale Agreement has been executed between the City of Portland and Patrons Oxford Insurance for Limited Common Element (LCE) 4 within the Technology Park. Patrons Oxford Insurance is proposing to develop Unit 4 and LCE 4, and a Level III Site Plan application is being submitted concurrently for this work. The development of LCE 4 will also include the construction of a short section of roadway to extend access to the proposed driveway of LCE 4.

Modifications to some of the original LCE and road easement boundaries will be required to accommodate the proposed LCE 4 development. The road has been shifted, resulting in some minor changes to the adjacent LCE 5, 6, and 7 lots. The Unitil gas line easement will also be shortened to end at the new road easement boundary. The enclosed draft Subdivision Plat shows the proposed new boundaries.

The Phase boundaries have not yet been updated on the Subdivision Plat. As part of the Maine Department of Environmental Protection (DEP) and Army Corps permitting process for the overall technology park, a Phase plan for wetland impacts was developed. A Minor Revision to the Natural Resource Protection Act (NRPA) has been submitted to the Maine DEP and Army Corps, and as part of this submission, a revision to the wetland impact phasing has been proposed. The enclosed wetland impact figure shows two phases as outlined below:

- Phase 1 – 1,120 linear feet of road including road that has already been built and road that is being proposed for construction as part of this project, LCE 1, LCE 2, and LCE 4.

- Phase 2 – 270 linear feet of remaining road, LCE 3, LCE 5 (including trailhead access and parking), LCE 6, & LCE 7.

Pending approval from the Maine DEP and the Army Corps of Engineers of the wetland phasing we propose an adjustment to the Subdivision Plat Phase boundaries to match with the wetland phasing. We are happy to discuss this proposed phasing change with you further.

Please do not hesitate to contact me at (207)558-3763 or by email at lswett@woodardcurran.com if you have any questions or require additional information.

Sincerely,

WOODARD & CURRAN INC.

Lauren Swett

Lauren Swett, PE
Project Engineer

Enclosures: 2015.05.05 Recorded First Amended Subdivision Plat
DRAFT Second Amended Subdivision Plat
Wetland Impact Plan

cc: Nelle Hanig; Business Dev. Rep., Economic Development Division, City of Portland

Executive Department
Jon P. Jennings, City Manager

September 23, 2015

Re: Portland Technology Park Site 4 – Agent Authorization

To Whom It May Concern:

Woodard and Curran will be acting as the City of Portland's agent for all local, state, and federal permitting associated with the Portland Technology Park, Site 4 development project, located off of Rand Road in Portland, Maine.

Sincerely,

Jon P. Jennings
City Manager

Portland, Maine | Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

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. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are ***paid in full*** to the Inspections Office, City of Portland Maine by method noted below:

☐ Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐ Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐ I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

*It is our understanding that, as the City of Portland is the Applicant, fees are waived.

Lauren Swett — Applicant Signature: — Date: 10/5/15

Lauren Swett — I have provided digital copies and sent them on: — Date: 10/5/15

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.

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) 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
(207) 874-8719

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

Updated: June 1, 2015

PROJECT NAME: Portland Technology Park

PROPOSED DEVELOPMENT ADDRESS:

0 Rand Road

PROJECT DESCRIPTION:

Project also includes the re-alignment of the access road and the remaining lots within the previously approved Portland Technology Park Subdivision, which are owned by the City of Portland, to accomodate the development of Limited Common Element (LCE) 4 and associated infrastructure for the Patrons-Oxford Insurance headquarters, including utilities and stormwater management system.

CHART/BLOCK/LOT: 249 A001001

PRELIMINARY PLAN _____ (date)
FINAL PLAN 10/5/15 (date)
*Original Submission for Portland Technology Park: 11/5/10

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: City of Portland - Economic Development Department, c/o Gregory Mitchell Business Name, if applicable: Address: 389 Congress Street City/State : Portland/ME Zip Code: 04101	**Applicant Contact Information** Work # 207-874-8945 Home# Cell # Fax# 207-756-8217 e-mail: gmitchell@portlandmaine.gov
Owner – (if different from Applicant) Name: Address: City/State : Zip Code:	**Owner Contact Information** Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Woodard & Curran, c/o Lauren Swett, PE Address: 41 Hutchins Drive City/State : Portland/ME Zip Code: 04102	**Agent/Representative Contact information** Work # 207-774-2112 Cell # e-mail: lswett@woodardcurran.com
Billing Information Name: City of Portland - Economic Development Department, c/o Gregory Mitchell Address: 389 Congress Street City/State : Portland/ME Zip Code: 04101	**Billing Information** Work # 207-874-8945 Cell # Fax# 207-756-8217 e-mail: gmitchell@portlandmaine.gov

Engineer *See Agent/Representative* Name: Address: City/State : Zip Code:	**Engineer Contact Information** Work # Cell # Fax# e-mail:
Surveyor Name: SGC Engineering, LLC c/o Scot MacDonald Address: 501 County Road City/State : Westbrook/ME Zip Code: 04092	**Surveyor Contact Information** Work # (207)347-8100 Cell # Fax# e-mail:
Architect Name: Scott Simons Architects, c/o Austin Smith Address: 75 York Street City/State : Portland/ME Zip Code: 04101	**Architect Contact Information** Work # 207-772-4656 Cell # Fax# e-mail: austin@simonsarchitects.com
Attorney Name: Ann Freeman Address: 389 Congress Street City/State : Portland/ME Zip Code: 04101	**Attorney Contact Information** Work # 207-874-8480 Cell # Fax# 207-874-8497 e-mail: amf@portlandmaine.gov

APPLICATION FEES:
Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)

Level III Development (check applicable reviews)
___ Less than 50,000 sq. ft. ($500.00)
___ 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 $300,00 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)
X* Planning Board Review ($500)

The City invoices separately for the following:
- Notices ($.75 each)
- Legal Ad (% of total Ad)
- Planning Review ($40.00 hour)
- Legal Review ($75.00 hour)

Third party review fees are 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 ___ x $25/lot = _____
___ Site Location ($3,000, 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

*It is our understanding that, as the City of Portland is the Applicant, fees are waived.

Updated: June 1, 2015

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal

2. **In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.**

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. **One (1) full size site plans** that must be **folded.**
2. One (1) copy of all written materials or as follows, unless otherwise noted:
   a. Application form that is completed and signed.
   b. Cover letter stating the nature of the project.
   c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

APPLICANT SIGNATURE:

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:**
Lauren Swett	10/5/15

PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	1,741,700	sq. ft.
Proposed Total Disturbed Area of the Site	595,465	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)	0	sq. ft.
Impervious Area (Total Proposed)	405,979	sq. ft.
Building Ground Floor Area and Total Floor Area		
Building Footprint (Total Existing)	0	sq. ft.
Building Footprint (Total Proposed)	80,500	sq. ft.
Building Floor Area (Total Existing)	0	sq. ft.
Building Floor Area (Total Proposed)	121,000	sq. ft.
Zoning		
Existing	OP & RP	
Proposed, if applicable	N/A	
Land Use		
Existing	Technology Business Park	
Proposed	N/A	
Residential, If applicable	N/A	
# of Residential Units (Total Existing)		
# of Residential Units (Total Proposed)		
# of Lots (Total Proposed)		
# of Affordable Housing Units (Total Proposed)		
Proposed Bedroom Mix	N/A	
# of Efficiency Units (Total Proposed)		
# of One-Bedroom Units (Total Proposed)		
# of Two-Bedroom Units (Total Proposed)		
# of Three-Bedroom Units (Total Proposed)		
Parking Spaces		
# of Parking Spaces (Total Existing)		
# of Parking Spaces (Total Proposed)		
# of Handicapped Spaces (Total Proposed)		
Bicycle Parking Spaces		
# of Bicycle Spaces (Total Existing)		
# of Bicycle Spaces (Total Proposed)		
Estimated Cost of Project		

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 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);	
		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 - 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
N/A*		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
X		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
X		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
X		1	Stormwater management plan and stormwater calculations
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.

*It is our understanding that, as the City of Portland is the Applicant, fees are waived.

All application materials, except for amended plat, submitted as part of Level III Site Plan Application, submitted under separate cover.

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;	

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- 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;
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;
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.

All application materials, except for amended plat, submitted as part of Level III Site Plan Application, submitted under separate cover.

PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
2.
3. Name address, telephone number of architect

4. Proposed uses of any structures [NFPA and IBC classification]
5.
6. Square footage of all structures [total and per story]

7. Elevation of all structures

8. Proposed fire protection of all structures
   - ***As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)***

9. Hydrant locations

10. Water main[s] size and location

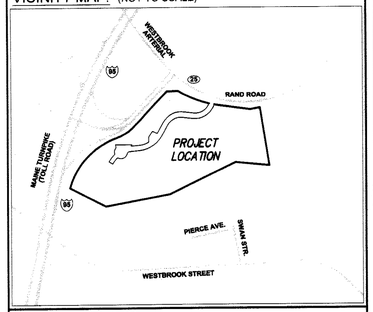
11. Access to all structures [min. 2 sides]

12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.

Some structures may require Fire flows using annex H of NFPA 1

All application materials, except for amended plat, submitted as part of Level III Site Plan Application, submitted under separate cover.

VICINITY MAP: (NOT TO SCALE)



GENERAL NOTES:

1) THIS PLAN AND ALL WORK ASSOCIATED WITH IT WAS PERFORMED BY SGC ENGINEERING, LLC PURSUANT TO A PROFESSIONAL SERVICES CONTRACT BETWEEN WOODARD & CURRAN, INC. AND SGC ENGINEERING LLC, DATED SEPTEMBER 8, 2010 AND SIGNED MARCH 14, 2011.

2) REFERENCE DEED FOR THE LOCUS PARCEL IS SIMON A. SNYDER, JASON A. SNYDER, RONALD A. BARRIS, TRUSTEE OF THE THERESE BARRIS MARITAL TRUST, CYNTHIA B. BAKER, TRUSTEE OF THE THEODORE BARRIS TRUST, RONALD A. BARRIS AND CYNTHIS B. BAKER, CO-TRUSTEES OF THE BARRIS FAMILY TRUST TO THE CITY OF PORTLAND, DATED DECEMBER 7, 1999 AND RECORDED IN DEED BOOK 15211, PAGE 031 AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

3) THE BEARINGS SHOWN HEREON ARE REFER TO GRID NORTH AND ARE BASED ON PLAN REFERRED TO UNDER MAP REFERENCES, NOTE 1.

4) THE LOCUS PARCEL IS DEPICTED AS LOTS 1 & 2 IN BLOCK A ASSESSORS MAP 249. ABUTTING PROPERTY OWNER INFORMATION REFERENCED HEREON WAS TAKEN FROM THE CITY OF PORTLAND ASSESSOR'S DATA AS OF THE DATE OF THIS PLAN.

5) RAND ROAD IS A PUBLIC HIGHWAY, THE SIDELINE LOCATIONS ARE BASED ON THE PLAN REFERENCED UNDER NOTE 1 OF MAP REFERENCES BELOW AND MAINE TURNPIKE AUTHORITY PLANS ON FILE AT THE OFFICES FOR THE MAINE TURNPIKE AUTHORITY.

6) NO SUBSURFACE INVESTIGATION HAS BEEN PERFORMED BY SGC ENGINEERING, LLC. DIG-SAFE SHOULD BE CONTACTED PRIOR TO COMMENCING ANY EXCAVATION. (888-344-7233).

7) THE BOUNDARY INFORMATION ON THIS PLAN IS BASED ON THE PLAN REFERENCED UNDER NOTE 1 OF MAP REFERENCES. SGC ENGINEERING FIELD CREWS COMPLETED A SURVEY OF THE PIPELINE LOCATIONS WITHIN THE PORTLAND PIPELINE COMPANY EASEMENT AND EXISTING MONUMENTATION FOUND AND SET BY PREVIOUS SURVEY COMPLETED BY LAND SERVICES, INC., FOR THE PURPOSE OF VERIFYING THEIR EXISTENCE AND TO OVERLAY DESIGN INFORMATION WITHIN BOUNDARIES DETERMINED BY LAND SERVICES, INC. SGC ENGINEERING DID NOT CONFIRM PERIMETER BOUNDARIES BEYOND LOCATION OF MONUMENTATION.

8) REFERENCE IS HEREBY MADE TO THE PORTLAND TECHNOLOGY PARK CONDOMINIUM DECLARATION OF CONDOMINIUM, INCLUSIVE OF BYLAWS, TO BE RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS AT BOOK _____, PAGE _____.

9) ELEVATIONS ARE BASED ON NAVD 1988 DATUM.

10) CLEARING LIMITS SHALL BE RESTRICTED TO LIMITED COMMON ELEMENT AREAS, EASEMENT AREA 1 ASSOCIATED WITH THE SITE ROADWAY, EASEMENT AREA 2 ASSOCIATED WITH ACCESS TO THE TRAIL HEAD PARKING, AND EASEMENT AREA 3 ASSOCIATED WITH THE TRAIL HEAD PARKING AND 20 FT WIDE EASEMENT AREA FOR THE GAS LINE (TO EASEMENT AREA 1 NEAR LCES 5 & 7. MANAGEMENT OF THE FORESTED COMMON AREAS OUTSIDE OF THE CLEARING LIMITS SHALL BE PERFORMED IN ACCORDANCE WITH A FOREST MANAGEMENT PLAN PREPARED FOR THE CITY OF PORTLAND AND APPROVED BY THE CITY ARBORIST. MONUMENTATION OF THE CLEARING LIMIT BOUNDARIES SHALL OCCUR PRIOR TO THE START OF CONSTRUCTION.

11) PHASE 1 INCLUDES CONSTRUCTION OF ALL PROPOSED RIGHT-OF-WAY IMPROVEMENTS IN RAND ROAD; 950 LF OF PARK ROADWAY WITHIN EASEMENT AREA 1; TEMPORARY GRAVEL TRAIL HEAD PARKING AREA WITHIN EASEMENT AREA 2; TRAIL HEAD PARKING AREA WITHIN EASEMENT AREA 3; LIMITED COMMON ELEMENT AREAS 1, 2 AND 3. PHASE 2 INCLUDES CONSTRUCTION OF REMAINING 450 LF OF PARK ROADWAY WITHIN EASEMENT AREA 1 AND LIMITED COMMON ELEMENT AREAS 4, 5, 6, AND 7.

12) PROJECT IS SUBJECT TO THE CONDITIONS SET FORTH IN CITY OF PORTLAND SITE PLAN APPROVAL, SUBDIVISION APPROVAL, AND TRAFFIC MOVEMENT PERMIT; MAINE DEP NATURAL RESOURCES PROTECTION ACT AND SITE LOCATION OF DEVELOPMENT ACT DEPARTMENT ORDER; AND US ARMY CORPS OF ENGINEERS MAINE GENERAL PERMIT AUTHORIZATION. COPIES OF THESE DOCUMENTS ARE AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

13) PROJECT IS SUBJECT TO THE PLANS APPROVED UNDER SITE PLAN REVIEW BY THE CITY OF PORTLAND PLANNING AUTHORITY. COPIES OF THESE DOCUMENTS ARE AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

14) RESPONSIBILITIES FOR STORMWATER MANAGEMENT SYSTEM INSPECTIONS AND MAINTENANCE ARE IDENTIFIED WITHIN THE DECLARATION OF CONDOMINIUM. STORMWATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE REQUIREMENTS ARE IDENTIFIED IN A STORMWATER MANAGEMENT PLAN AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

MAP REFERENCES:

1) A PLAN ENTITLED "PLAN OF STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" DATED OCT. 1997 AND LAST REVISED OCT. 23, 2002, PREPARED BY LAND SERVICES INC.

LEGEND: LINETYPES & HATCH PATTERN

- ADJACENT LOT LINE
- ADJACENT R.O.W. LINE
- LOCUS BOUNDARY LINE
- OLD TRACT LINE
- EASEMENT LINE
- CONTROLLED ACCESS
- OVERHEAD ELECTRIC LINE
- SANITARY SEWER LINE
- LIMITED COMMON ELEMENT YARD LIMIT
- UNIT

LEGEND: POINT TYPES & SYMBOLS

CONCRETE BOUND	SINGLE POST SIGN
GRANITE BOUND TO BE SET	ELECTRIC MANHOLE
PIPE	LIGHT POST
REBAR	GAS VALVE
SOLID SMOOTH ROD	GAS VENT PIPE
RAILROAD SPIKE	SEWER MANHOLE
HANDICAPPED SYMBOL	HYDRANT
UTILITY POLE	WATER MANHOLE
SQUARE CATCH BASIN	WATER SHUT-OFF
ROUND CATCH BASIN	WATER VALVE
DRAIN MANHOLE	DECIDUOUS TREE
LIMITED COMMON ELEMENT (L.C.E.)	

GRAPHIC SCALE: 1" = 100'

100 50 0 100 200 300

EASEMENT AREA 1 CURVE TABLE

CURVE	RADIUS	LENGTH	BEARING	CHORD DIST.
C1	250.00	30.49	S85°16'18"W	30.47
C2	74.58	64.22	N39°39'58"W	62.25
C3	176.00	56.12	N14°13'36"E	55.87
C4	1180.00	60.59	N85°30'52"E	60.58

EASEMENT AREA 1 LINE TABLE

LINE	LENGTH	BEARING
L1	20.97	S35°54'43"E
L2	35.12	N24°30'45"W
L3	19.39	S14°17'33"W
L4	2.94	N15°00'00"W
L5	23.23	N32°26'19"E

EASEMENT AREA 2 CURVE TABLE

CURVE	RADIUS	LENGTH	BEARING	CHORD DIST.
C5	76.54	37.59	S43°48'45"E	37.21
C6	74.00	77.50	S59°44'51"E	74.00
C7	114.00	119.39	N59°44'51"W	114.01
C8	20.00	8.26	N41°34'58"W	8.21

EASEMENT AREA 2 LINE TABLE

LINE	LENGTH	BEARING
L6	48.58	S29°44'44"E
L7	40.00	S00°08'40"E
L8	59.04	N29°44'44"W

CERTAIN PLANNING BOARD CONDITIONS OF SUBDIVISION APPROVAL

iv.) THIS APPROVAL ENTITLES THE APPLICANT AND FUTURE DEVELOPERS OF THE OFFICE PARK UNITS TO DEVELOP THE MAXIMUM NUMBER AND SIZE OF PARKING SPACES AS SHOWN ON THE SUBDIVISION PLAT AND OVERALL SITE PLAN SUBJECT TO PROVIDING CONFIRMATION OF THE NEED FOR THESE SPACES AND SPACE DIMENSIONS (VIA A PARKING ANALYSIS) AT THE TIME THAT THE UNIT IS UNDER SITE PLAN REVIEW; AND

v.) THAT THE CONDOMINIUM ASSOCIATION SHALL DEVELOP AND MANAGE A TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN ACCEPTABLE TO THE PLANNING AUTHORITY, REVIEWED AS PART OF THE INITIAL AND SUBSEQUENT SITE PLAN APPROVALS FOR EACH BUILDING UNIT WITHIN THE LIMITED COMMON ELEMENT AREAS; AND

vi.) THAT THE DEVELOPMENT OF LIMITED COMMON ELEMENT AREAS AND UNITS IS SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF PORTLAND PLANNING AUTHORITY FOR CONFORMANCE WITH THE PORTLAND TECHNOLOGY PARK DESIGN GUIDELINES AND CITY OF PORTLAND CODE OF ORDINANCES, CHAPTER 14 LAND USE, ARTICLE V. SITE PLAN FOR BUILDING ARCHITECTURE, SITE LANDSCAPING, SITE PEDESTRIAN CIRCULATION, BICYCLE PARKING, LAMP SPECIFICATIONS AND SIGNAGE AND ANY CHANGES OR ALTERATIONS TO APPROVED TRAFFIC, PARKING, ACCESS, UTILITY, EXTERIOR LIGHTING, TREE PRESERVATION AND STORMWATER FEATURES; AND

vii.) THE CLEARING LIMITS SHALL BE RESTRICTED TO LIMITED COMMON ELEMENT (LEC) AREAS, EASEMENT AREA 1 ASSOCIATED WITH THE SITE ROADWAY, EASEMENT AREA 2 ASSOCIATED WITH ACCESS TO THE TRAIL HEAD PARKING, AND EASEMENT AREA 3 ASSOCIATED WITH THE TRAIL HEAD PARKING, AND THE 20 FT WIDE EASEMENT AREA FOR THE GAS LINE (TO EASEMENT AREA 1 NEAR LCES 5 & 7); AND

viii.) THAT THE APPLICANT AND ALL ASSIGNS SHALL COMPLY WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III, POST-CONSTRUCTION STORM WATER MANAGEMENT, WHICH SPECIFIES THE ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS. THE DEVELOPER/CONTRACTOR/SUBCONTRACTOR MUST COMPLY WITH CONDITIONS OF THE CONSTRUCTION STORMWATER MANAGEMENT PLAN AND SEDIMENT & EROSION CONTROL PLAN BASED ON CITY STANDARDS AND STATE GUIDELINES; AND

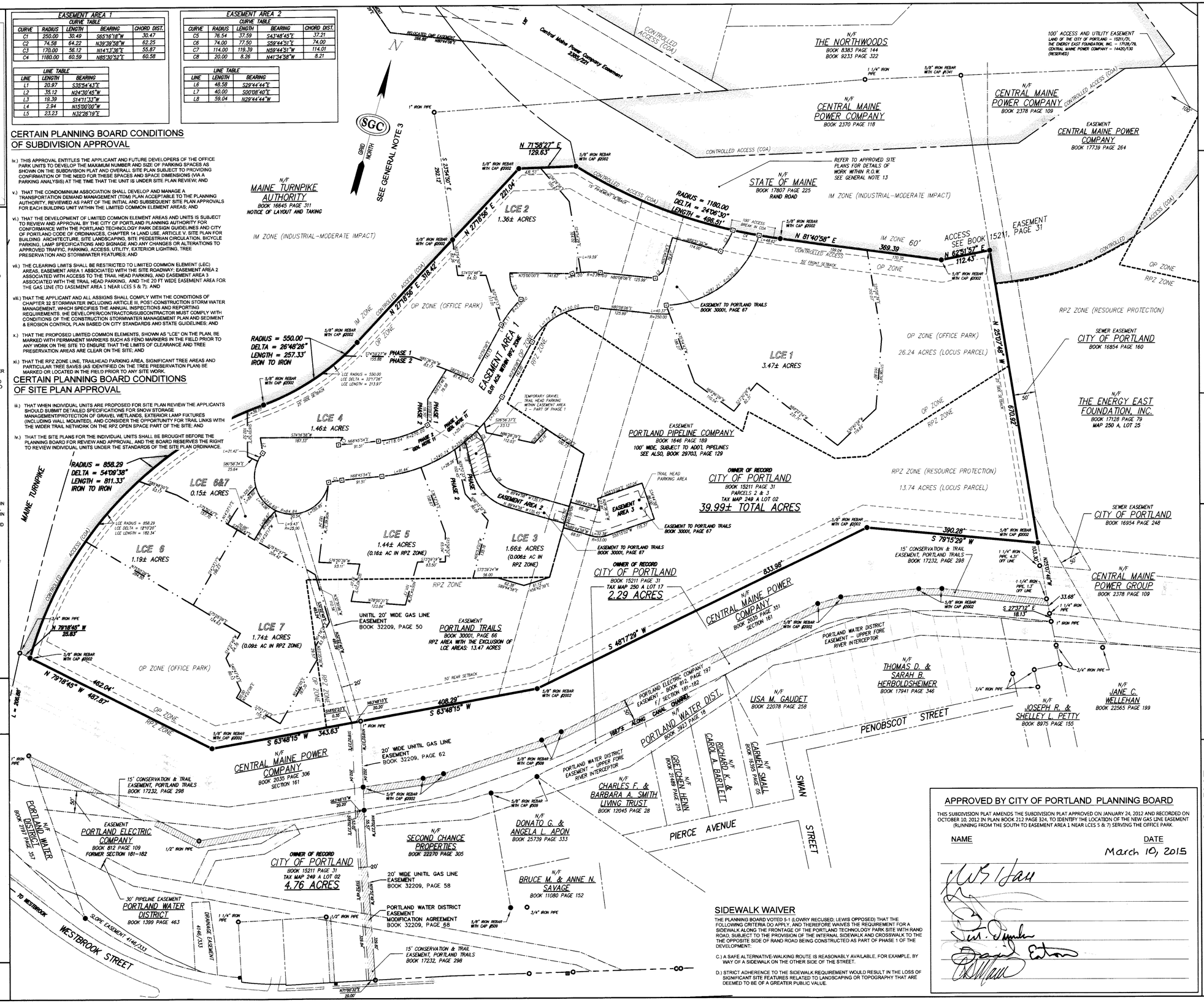
x.) THAT THE PROPOSED LIMITED COMMON ELEMENTS, SHOWN AS "LCE" ON THE PLAN, BE MARKED WITH PERMANENT MARKERS SUCH AS FENO MARKERS IN THE FIELD PRIOR TO ANY WORK ON THE SITE TO ENSURE THAT THE LIMITS OF CLEARANCE AND TREE PRESERVATION AREAS ARE CLEAR ON THE SITE; AND

xi.) THAT THE RPZ ZONE LINE, TRAILHEAD PARKING AREA, SIGNIFICANT TREE AREAS AND PARTICULAR TREE SAVES (AS IDENTIFIED ON THE TREE PRESERVATION PLAN) BE MARKED OR LOCATED IN THE FIELD PRIOR TO ANY SITE WORK.

CERTAIN PLANNING BOARD CONDITIONS OF SITE PLAN APPROVAL

iii.) THAT WHEN INDIVIDUAL UNITS ARE PROPOSED FOR SITE PLAN REVIEW THE APPLICANTS SHOULD SUBMIT DETAILED SPECIFICATIONS FOR SNOW STORAGE MANAGEMENT/PROTECTION OF GRAVEL WETLANDS, EXTERIOR LAMP FIXTURES (INCLUDING WALL MOUNTED), AND CONSIDER THE OPPORTUNITY FOR TRAIL LINKS WITH THE WIDER TRAIL NETWORK ON THE RPZ OPEN SPACE PART OF THE SITE; AND

iv.) THAT THE SITE PLANS FOR THE INDIVIDUAL UNITS SHALL BE BROUGHT BEFORE THE PLANNING BOARD FOR REVIEW AND APPROVAL, AND THE BOARD RESERVES THE RIGHT TO REVIEW INDIVIDUAL UNITS UNDER THE STANDARDS OF THE SITE PLAN ORDINANCE.



SIDEWALK WAIVER

THE PLANNING BOARD VOTED 5-1 (LOWRY RECUSED; LEWIS OPPOSED) THAT THE FOLLOWING CRITERIA DO APPLY, AND THEREFORE WAIVES THE REQUIREMENT FOR A SIDEWALK ALONG THE FRONTAGE OF THE PORTLAND TECHNOLOGY PARK SITE WITH RAND ROAD, SUBJECT TO THE PROVISION OF THE INTERNAL SIDEWALK AND CROSSWALK TO THE THE OPPOSITE SIDE OF RAND ROAD BEING CONSTRUCTED AS PART OF PHASE 1 OF THE DEVELOPMENT:

C.) A SAFE ALTERNATIVE-WALKING ROUTE IS REASONABLY AVAILABLE, FOR EXAMPLE, BY WAY OF A SIDEWALK ON THE OTHER SIDE OF THE STREET.

D.) 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.

APPROVED BY CITY OF PORTLAND PLANNING BOARD

THIS SUBDIVISION PLAT AMENDS THE SUBDIVISION PLAT APPROVED ON JANUARY 24, 2012 AND RECORDED ON OCTOBER 10, 2012 IN PLAN BOOK 212 PAGE 324, TO IDENTIFY THE LOCATION OF THE NEW GAS LINE EASEMENT (RUNNING FROM THE SOUTH TO EASEMENT AREA 1 NEAR LCES 5 & 7) SERVING THE OFFICE PARK.

NAME _____ DATE March 10, 2015

CUMBERLAND COUNTY, ss REGISTRY OF DEEDS
Received: JUNE 19 2015 at 12 h 57 m PM, and Filed in Plan Book 215 Page 250
ATTEST: _____ Register

REVISIONS:

NO.	DATE	
1	9-30-2011	SUBMITTAL FOR CONCEPTUAL REVIEW
2	10-17-2011	SECOND SUBMISSION FOR REVIEW
3	1-17-2012	THIRD SUBMISSION FOR REVIEW
4	7-17-2012	FINAL SUBMISSION FOR REVIEW
5	9-25-2012	REVISED PER WOODARD & CURRAN, INC.
6	2-12-2015	ADD GAS EASEMENT
7	5-1-2015	REVISED PER PLANNING BOARD HEARING

SEAL — ONLY VALID WITH ORIGINAL STAMP — JUNE 15, 2015

SGC ENGINEERING, LLC
• Civil Design & Survey Engineering
• Environmental & Regulatory Permitting
• Electrical Power Systems Engineering
SERVING OUR CLIENTS IN THE U.S.A. & CANADA
Target Technology Center, 20 Godfrey Drive, Suite 200, Orono, Maine 04402, Tel: 207-866-6501, Fax: 207-947-8101
89 Swift Street, Suite 201, South Portland, Maine 04106, Tel: 207-485-1536
1806 East 20th Street, Suite 12, Farmington, New Mexico 87401, Tel: 505-592-8874

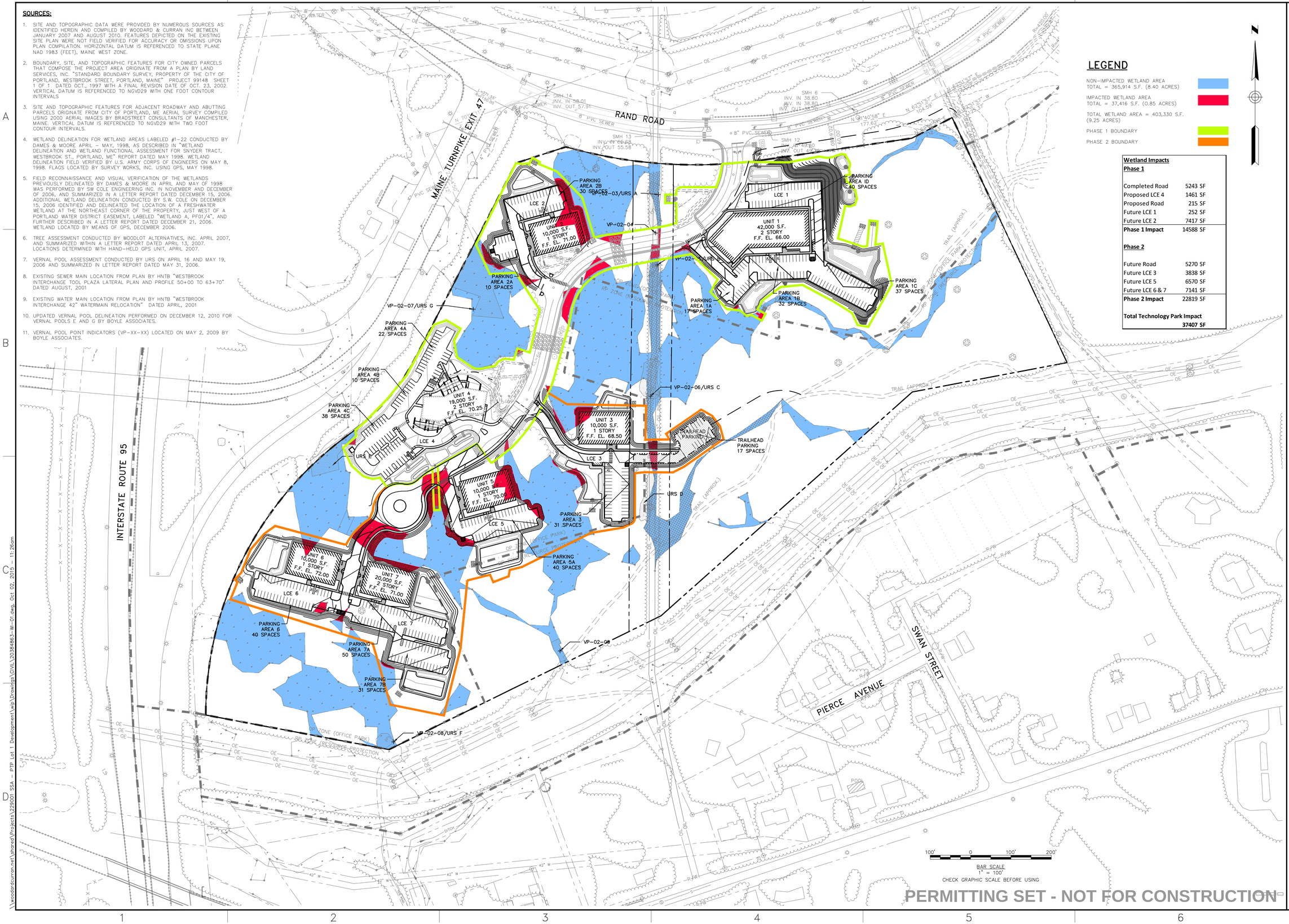
DATE: 08-29-11 | SCALE: 1" = 100' | CALC: DED | DRAWN: DED | CHECK: ADK | PROJECT: 695001 | FILE: BND-695001 (r1) | SHEET 1 OF 1

FIRST AMENDED SUBDIVISION PLAT OF
PORTLAND TECHNOLOGY PARK CONDOMINIUM
RAND ROAD, PORTLAND, MAINE
RECORD OWNER:
CITY OF PORTLAND - DECLARANT
38b CONGRESS STREET, PORTLAND, MAINE

24x36 SHEET
1:1

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
2. BOUNDARY, SITE, AND TOPOGRAPHIC FEATURES FOR CITY OWNED PARCELS THAT COMPOSE THE PROJECT AREA ORIGINATE FROM A PLAN BY LAND SERVICES, INC. "STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" PROJECT 99148 SHEET 1 OF 1 DATED OCT., 1997 WITH A FINAL REVISION DATE OF OCT. 23, 2002. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH ONE FOOT CONTOUR INTERVALS
3. SITE AND TOPOGRAPHIC FEATURES FOR ADJACENT ROADWAY AND ABUTTING PARCELS ORIGINATE FROM CITY OF PORTLAND, ME AERIAL SURVEY COMPILED USING 2000 AERIAL IMAGES BY BRADSTREET CONSULTANTS OF MANCHESTER, MAINE. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH TWO FOOT CONTOUR INTERVALS.
4. WETLAND DELINEATION FOR WETLAND AREAS LABELED #1–22 CONDUCTED BY DAMES & MOORE APRIL – MAY, 1998, AS DESCRIBED IN "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" REPORT DATED MAY 1998. WETLAND DELINEATION FIELD VERIFIED BY U.S. ARMY CORPS OF ENGINEERS ON MAY 8, 1998. FLAGS LOCATED BY SURVEY WORKS, INC. USING GPS, MAY 1998.
5. FIELD RECONNAISSANCE AND VISUAL VERIFICATION OF THE WETLANDS PREVIOUSLY DELINEATED BY DAMES & MOORE IN APRIL AND MAY OF 1998 WAS PERFORMED BY SW COLE ENGINEERING INC. IN NOVEMBER AND DECEMBER OF 2006, AND SUMMARIZED IN A LETTER REPORT DATED DECEMBER 15, 2006. ADDITIONAL WETLAND DELINEATION CONDUCTED BY S.W. COLE ON DECEMBER 15, 2006 IDENTIFIED AND DELINEATED THE LOCATION OF A FRESHWATER WETLAND AT THE NORTHEAST CORNER OF THE PROPERTY, JUST WEST OF A PORTLAND WATER DISTRICT EASEMENT, LABELED "WETLAND A, PF01/4", AND FURTHER DESCRIBED IN A LETTER REPORT DATED DECEMBER 21, 2006. WETLAND LOCATED BY MEANS OF GPS, DECEMBER 2006.
6. TREE ASSESSMENT CONDUCTED BY WOODLOT ALTERNATIVES, INC. APRIL 2007, AND SUMMARIZED WITHIN A LETTER REPORT DATED APRIL 13, 2007. LOCATIONS DETERMINED WITH HAND–HELD GPS UNIT, APRIL 2007.
7. VERNAL POOL ASSESSMENT CONDUCTED BY URS ON APRIL 16 AND MAY 19, 2006 AND SUMMARIZED IN LETTER REPORT DATED MAY 31, 2006.
8. EXISTING SEWER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE TOOL PLAZA LATERAL PLAN AND PROFILE 50+00 TO 63+70" DATED AUGUST, 2001
9. EXISTING WATER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE 42" WATERMAIN RELOCATION" DATED APRIL, 2001
10. UPDATED VERNAL POOL DELINEATION PERFORMED ON DECEMBER 12, 2010 FOR VERNAL POOLS E AND G BY BOYLE ASSOCIATES.
11. VERNAL POOL POINT INDICATORS (VP–XX–XX) LOCATED ON MAY 2, 2009 BY BOYLE ASSOCIATES.



LEGEND

- NON–IMPACTED WETLAND AREA TOTAL = 365,914 S.F. (8.40 ACRES)
- IMPACTED WETLAND AREA TOTAL = 37,416 S.F. (0.85 ACRES)
- TOTAL WETLAND AREA = 403,330 S.F. (9.25 ACRES)
- PHASE 1 BOUNDARY
- PHASE 2 BOUNDARY

Wetland Impacts	
Phase 1	
Completed Road	5243 SF
Proposed LCE 4	1461 SF
Proposed Road	215 SF
Future LCE 1	252 SF
Future LCE 2	7417 SF
Phase 1 Impact	14588 SF
Phase 2	
Future Road	5270 SF
Future LCE 3	3838 SF
Future LCE 5	6570 SF
Future LCE 6 & 7	7141 SF
Phase 2 Impact	22819 SF
Total Technology Park Impact	**37407 SF**

PERMITTING SET - NOT FOR CONSTRUCTION

41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

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STATE OF MAINE
DAVID A. SENUS
PROFESSIONAL ENGINEER

10/2/2015

REV	DESCRIPTION	DATE

DESIGNED BY: MKC/JJS
DRAWN BY: JBC
CHECKED BY: DAS
J:\229001_WI-01.dwg

WETLAND IMPACT FIGURE

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: 1 OF 1

WI-01

\\woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\CIVIL\20384863–WI–01.dwg, Oct 02, 2015 – 11:26am

Att. B

LEVEL III SITE PLAN APPLICATION

Portland Technology Park - LCE 4 Development

VOLUME 1 REPORT

WOODARD &CURRAN

STATE OF MAINE
LAUREN JANE SWETT
12284
LICENSED PROFESSIONAL ENGINEER

Lauren Swett 10/2/15

woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

41 Hutchins Drive, Portland, Maine 04102
Tel. (207) 774-2112 Fax (207) 774-6635

229001
Patrons-Oxford Insurance Company
October 2015

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1. APPLICATION FORM

Portland, Maine | Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

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. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are ***paid in full*** to the Inspections Office, City of Portland Maine by method noted below:

☐ Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐ Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐ I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

*Check for payment of fee will be hand-delivered upon submission application.

Lauren Swett — Applicant Signature: — Date: 10/2/15

Lauren Swett — I have provided digital copies and sent them on: 10/2/15 — Date: 10/2/15

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.

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) 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
(207) 874-8719

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

Updated: June 1, 2015

PROJECT NAME: Portland Technology Park LCE 4

PROPOSED DEVELOPMENT ADDRESS:

0 Rand Road

PROJECT DESCRIPTION:

Development of Limited Common Element (LCE) 4 of previously approved Portland Technology Park Subdivision and associated infrastructure, including construction of a two-story, office building, parking, utilities, and stormwater management system for the Patrons-Oxford Insurance headquarters. Project also includes the re-alignment of the access road and the remaining lots within the subdivision, which are owned by the City of Portland; a Subdivision Amendment Application is being submitted for this work under separate cover.

CHART/BLOCK/LOT: 249 A001001

PRELIMINARY PLAN _____ (date)
FINAL PLAN 10/2/15 (date)
*Original Submission for Portland Technology Park: 11/5/10

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Patrons-Oxford Insurance Company Business Name, if applicable: Address: PO Box 1960 City/State : Auburn/ME Zip Code: 04211	**Applicant Contact Information** Work # 207-783-225 Home# Cell # Fax# 207-783-7507 e-mail: mpettingill@patrons.com
Owner – (if different from Applicant) Name: Address: City/State : Zip Code:	**Owner Contact Information** Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Woodard & Curran, c/o Lauren Swett, PE Address: 41 Hutchins Drive City/State : Portland/ME Zip Code: 04102	**Agent/Representative Contact information** Work # 207-774-2112 Cell # e-mail: lswett@woodardcurran.com
Billing Information *See Applicant* Name: Address: City/State : Zip Code:	**Billing Information** Work # Cell # Fax# e-mail:

Engineer *See Agent/Representative* Name: Address: City/State : Zip Code:	**Engineer Contact Information** Work # Cell # Fax# e-mail:
Surveyor Name: Land Services, Inc. Address: 1288 Roosevelt Trail, PO Box 975 City/State : Raymond/ME Zip Code: 04071	**Surveyor Contact Information** Work # Cell # Fax# e-mail:
Architect Name: Scott Simons Architects, c/o Austin Smith Address: 75 York Street City/State : Portland/ME Zip Code: 04101	**Architect Contact Information** Work # 207-772-4656 Cell # Fax# e-mail: austin@simonsarchitects.com
Attorney Name: Ann Freeman Address: 389 Congress Street City/State : Portland/ME Zip Code: 04101	**Attorney Contact Information** Work # 207-874-8480 Cell # Fax# 207-874-8497 e-mail: amf@portlandmaine.gov

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)

Level III Development (check applicable reviews)

_X_ Less than 50,000 sq. ft. ($500.00)
___ 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 $300,00 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)
_X_ Planning Board Review ($500)

_____

The City invoices separately for the following:

- Notices ($.75 each)
- Legal Ad (% of total Ad)
- Planning Review ($40.00 hour)
- Legal Review ($75.00 hour)

Third party review fees are 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 ___ x $25/lot = _____
___ Site Location ($3,000, 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

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal

2. **In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.**

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. **One (1) full size site plans** that must be **folded.**
2. One (1) copy of all written materials or as follows, unless otherwise noted:
   a. Application form that is completed and signed.
   b. Cover letter stating the nature of the project.
   c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

APPLICANT SIGNATURE:

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:**
Lauren Swett	10/2/15

PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site		sq. ft.
Proposed Total Disturbed Area of the Site	87,120	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)	7,212 (Water in Gravel Wetland #4)	sq. ft.
Impervious Area (Total Proposed)	70,797 (includes extension of access road)	sq. ft.
Building Ground Floor Area and Total Floor Area		
Building Footprint (Total Existing)	0	sq. ft.
Building Footprint (Total Proposed)	9,500	sq. ft.
Building Floor Area (Total Existing)	0	sq. ft.
Building Floor Area (Total Proposed)	19,000	sq. ft.
Zoning		
Existing	OP	
Proposed, if applicable	N/A	
Land Use		
Existing	Technology Business Park	
Proposed	N/A	
Residential, If applicable	N/A	
# of Residential Units (Total Existing)		
# of Residential Units (Total Proposed)		
# of Lots (Total Proposed)		
# of Affordable Housing Units (Total Proposed)		
Proposed Bedroom Mix	N/A	
# of Efficiency Units (Total Proposed)		
# of One-Bedroom Units (Total Proposed)		
# of Two-Bedroom Units (Total Proposed)		
# of Three-Bedroom Units (Total Proposed)		
Parking Spaces		
# of Parking Spaces (Total Existing)	0	
# of Parking Spaces (Total Proposed)	70	
# of Handicapped Spaces (Total Proposed)	3	
Bicycle Parking Spaces		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	10	
Estimated Cost of Project	$5 Million	

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 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);	
		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 - 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
X		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
X		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
X		1	Stormwater management plan and stormwater calculations
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;
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;
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.

PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
2.
3. Name address, telephone number of architect

4. Proposed uses of any structures [NFPA and IBC classification]
5.
6. Square footage of all structures [total and per story]

7. Elevation of all structures

8. Proposed fire protection of all structures
   - ***As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)***

9. Hydrant locations

10. Water main[s] size and location

11. Access to all structures [min. 2 sides]

12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.

Some structures may require Fire flows using annex H of NFPA 1

COMMITMENT & INTEGRITY
DRIVE RESULTS

41 Hutchins Drive
Portland, Maine 04102
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

October 2, 2015

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

Re: Portland Technology Park – Limited Common Element 4 Development
Level III Site Plan Application – Fire Department Review

Dear Chris:

Thank you for coordinating the City of Portland Fire Department's review of the Limited Common Element (LCE or lot) 4 development in the Portland Technology Park. Woodard & Curran is filing a Level III Site Plan Application with the City of Portland on behalf of the applicant Patrons Oxford Insurance Company.

The Portland Technology Park is a previously approved Office Park Planned Unit Development (OP-PUD), near the I-95 interchange (Exit #47) in the City of Portland, Maine. Construction of the first phase of the roadway has been completed. The City of Portland owns the approximately 40-acre site, and the Patrons-Oxford Insurance Company is proposing the development of LCE 4 of the Portland Technology Park; a purchase & sale agreement has been executed between Patrons-Oxford Insurance Company and the City of Portland. The proposed project involves the construction of a two-story, 19,000 square foot office building, parking, utilities, and stormwater management system. The project also includes the re-alignment of the access road and the remaining lots within the Portland Technology Park Subdivision, which are owned by the City of Portland. An application for a Subdivision Amendment is being submitted under separate cover by the City of Portland.

A Fire Plan (FP-01) was created for the Technology Park as part of the initial permitting effort. This plan has been updated to include the proposed Limited Common Element (LCE) 4 Development. In addition, a Life Safety Plan and Code Summary (G-002) has been created for the proposed Unit 4 building. Both of these plans are attached and address the items in the Portland Fire Department Site Review Checklist as follows:

- Name, address, telephone number of applicant
    - This information is provided on sheet FP-01. It now includes both the City of Portland as the contact for the Technology Park and Patrons Oxford Insurance as the contact for LCE 4.
- Name, address, telephone number of architect
    - This information is provided on sheet FP-01.
- Proposed uses of any structures [NFPA and IBC classification]
    - General discussion for the Technology Park is provided on FP-01. Specific LCE 4 structure uses are defined on sheet G-002. Unit 4 will be classified as Mixed Use and Occupancy, Business, B-2, and Assembly, A-3.
- Square footage of all structures [total and per story].
    - This information is provided on sheet FP-01. Areas are conceptual for LCEs 1, 2, 3, 5, 6, and 7. LCE 4 information is as designed.

- Elevations of all structures
    - This information is provided on sheet FP-01. Elevations are conceptual for LCEs 1, 2, 3, 5, 6, and 7. LCE 4 information is as designed.
- Proposed fire protection of all structures
    - All structures shall be sprinkled as noted on both sheet FP-01 and G-002.
- Hydrant locations
    - Existing and proposed hydrant locations are shown on sheet FP-01. One hydrant will be constructed as part of this project.
- Water main size and location
    - The water main is 12 inches in diameter and is shown on sheet FP-01.
- Access to all structures [min. 2 sides]
    - Sheet FP-01 shows the location of all proposed future Technology Park buildings, with access to at least two sides. In addition, the plan shows fire truck access verification for the current proposed LCE 4 development. The fire truck turning template shows that the truck will drive over the curb on the driveway island. This curb will be sloped, granite, mountable curb, ensuring that fire truck access will be possible.
- A code summary shall be included referencing NFPA 1 and all fire department technical standards.
    - The development of LCE 4 will be in conformance with all NFPA and City of Portland Fire Department Standards.
        - Sheet G-002 provides a code review for the proposed LCE 4 building. Building fire protection will be provided by a sprinkler system and all materials will provide adequate fire resistance.
        - Sheet FP-01 shows the Technology Park's compliance with all Public Safety Technical Standards for fire hydrants and site access. No hazardous materials will be stored on the site. Blasting or open burning will not be required for construction.

We appreciate your comments and look forward to discussing this project further. If you have any questions or require additional information, please contact me at any time at (207)774-2112 or by email lswett@woodardcurran.com.

Sincerely,

WOODARD & CURRAN INC.

Lauren Swett

Lauren Swett, P.E.
Project Engineer

229001

Enclosures – Plan Set; Fire Plan FP-01; Code Review Plan G002

PATRONS
INSURANCE
Est. 1877
For all the things you value.

September 18, 2015

Re: Portland Technology Park Lot 4 – Agent Authorization

To Whom it May Concern:

Woodard & Curran will be acting as our agent for all local, state, and federal permitting associated with the Portland Technology Park, Lot 4 development project located off of Rand Road in Portland, Maine.

Sincerely,

Mark A. Pettingill
President & CEO

Patrons Oxford Insurance Company 24 Harriman Drive, P.O. Box 1960, Auburn, Maine 04211-1960
tel: 800-442-6071 • fax: 207-783-7507 / claim fax: 207-784-8311 • **www.patrons.com**

4. EVIDENCE OF RIGHT, TITLE AND INTEREST

The City of Portland currently owns the 40-acre Technology Park site. Title, right, or interest documentation was provided as part of the original permit application and can be provided again upon request.

A purchase & sale agreement has been executed between Patrons-Oxford Insurance Company and the City of Portland for Limited Common Element (LCE) 4. A copy of the original purchase and sale agreement, and a subsequent amendment between Patrons-Oxford Insurance and the City of Portland is attached to this Section. Note that extensions for the agreement will be issued as necessary until closing occurs.

4.1 ATTACHMENTS

- Purchase & Sale Agreement
- Addendum to Purchase & Sale Agreement

PURCHASE AND SALE AGREEMENT

THIS AGREEMENT for the purchase and sale of real estate made this 17th day of March, 2015 by and between the **CITY OF PORTLAND,** a body politic and corporate located in Cumberland County, Maine (hereinafter referred to as "Seller"), and **PATRONS OXFORD INSURANCE COMPANY**, a Maine insurance corporation, having its principal place of business at Auburn, Maine (hereinafter referred to as "Buyer").

WITNESSETH:

WHEREAS, Seller owns an approximately 3.47 acre parcel of land located at the Portland Technology Park, City of Portland, County of Cumberland, State of Maine, being known as Unit 1 and LCE #1 on that certain Subdivision Plat of Portland Technology Park Condominium, Rand Road, Portland, Maine dated September 29, 2011 and last revised on September 25, 2012, prepared by SGC Engineering, LLC for the City of Portland – Declarant, approved by the City of Portland Planning Board on January 24, 2012 and recorded in the Cumberland County Registry of Deeds on October 10, 2012 in Book 212, Page 324 (the "Plan," a copy of which is attached hereto as Exhibit A) and being further described as Unit 1 of the condominium known as the Portland Technology Park Condominium of which the Seller is the declarant as described in that certain Declaration of Condominium for the Portland Technology Park to be recorded in the Cumberland County Registry of Deeds (the "Declaration of Condominium"), together with all improvements, fixtures and rights appurtenant thereto, all as more particularly shown and depicted as the cross-hatched lot on the condominium plat shown on Exhibit B attached hereto and made part hereof (the "Property"). Title reference is made to a deed from Simon A. Snyder et alia to the City of Portland dated December 7, 1999 and recorded in the Cumberland County Registry of Deeds, Book 15211, Page 31; and

WHEREAS, Seller intends to sell and Buyer desires to acquire the Property.

NOW, THEREFORE, in consideration of the foregoing and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties, intending to be legally bound, hereby agree as follows:

1. SALE.

Seller agrees to sell the Property, and Buyer agrees to purchase the Property in accordance with the provisions hereof. It is hereby agreed and acknowledged that the actual description of the Property shall be determined based on the title and related due diligence work to be completed by Buyer pursuant to this Agreement and that such description shall be subject to Buyer's and Seller's final review and approval before including the same in the Deed (as that term is defined below) to be delivered by Seller to Buyer as set forth and described below.

2. CONSIDERATION.

The consideration for the property shall be Six Hundred Twenty-Five Thousand

Dollars ($625,000.00) payable as follows:

(a) A deposit of Twenty Thousand Dollars ($20,000.00) to be paid by Buyer within two (2) business days of the Effective Date and held by Buyer's agent, Andrew Ingalls of CBRE The Boulos Company, until closing and applied to the Purchase Price (or, if applicable, until returned to Buyer pursuant to this Agreement) (the "Deposit"); and

(b) The Purchase Price, less the Deposit, to be paid by Buyer to Seller at closing by wire transfer, certified check or bank cashier's check, subject to the adjustments provided for in this Agreement.

This is a cash purchase and no financing is required.

3. TITLE.

Seller shall convey the Property to Buyer at the closing in fee simple with good and marketable title or insurable title, subject to: (a) easements, privileges, restrictions, conditions, development rights, special declarant rights, and agreements created by or referred to in the Declaration of Condominium, as well as the matters shown or disclosed on the Plan, as may be amended; (b) provisions of (i) the Maine Condominium Act, and all amendments thereto; and (ii) the Declaration of Condominium, the bylaws and the plats and plans for The Portland Technology Park Condominium Association and all amendments or modification thereto; (iii) building, zoning and land use ordinances; (c) all restrictions required because the roadway serving the Portland Technology Park Condominium (including the Property), which roadway will continue to be owned by the Seller, was improved, in part, with funding from the United States Economic Development Administration (EDA), United States Department of Commerce, a copy of which restrictions is attached hereto as Exhibit C; and (d) such taxes and assessments, including common expenses allocable to the Property, if any, as are due and payable on the date of delivery of the Deed. At the closing, Seller shall execute and deliver to Buyer, against payment of the balance of the purchase price, a Municipal Quitclaim Deed without Covenant (the "Deed"). In the event that Seller is unable to convey title as aforesaid, Seller shall be given a reasonable period of time, not to exceed sixty (60) days, in which to remedy any title defects. In the event that said defects cannot be corrected or remedied or in the event that Seller elects not to remedy same, then the Deposit shall be returned to Buyer and this Agreement, and Seller's and Buyer's obligations hereunder, will terminate. Buyer may, at Buyer's option elect to close notwithstanding such defects as may exist. Seller and Buyer understand and agree that any mortgages and liens on the Property shall not be considered title defects provided that the same shall be discharged at or prior to closing at Seller's expense. Seller may use purchase money proceeds for this purpose. The Property shall be sold and conveyed strictly on an "as is", "where is" and "with all defects" basis, and, except as set forth below, without representation, warranty or covenant, express, implied or statutory, of any kind whatsoever, including, without limitation, representation, warranty or covenant as to condition, past or present use, tax ramifications or consequences, compliance with law, merchantability or fitness or suitability for any purpose, all of which are hereby expressly disclaimed.

4. POSSESSION.

Full possession of the Property will be delivered to Buyer at the transfer of title free and clear of all tenancies or occupancies by any person or entity.

5. REAL ESTATE TAXES, PRORATIONS AND TRANSFER TAX.

Buyer shall be liable for all real estate taxes beginning, as of the closing date, with fiscal year 2015-16 and continuing thereafter. Because the Property is currently owned by the City of Portland, which is exempt from real estate taxes, no taxes were assessed for fiscal year 2014-15 and no taxes will be prorated at the closing, provided, however, that any assessments and utilities for the Property shall be prorated as of the closing. The Maine real estate transfer tax shall be paid for by Buyer in accordance with 36 M.R.S.A. § 4641-A. Seller is exempt from paying the transfer tax pursuant to 36 M.R.S.A. § 4641-C.

6. RISK OF LOSS.

The risk of loss or damage to the Property by fire or otherwise, until transfer of title hereunder, is assumed by the Seller. The Property is to be delivered in substantially the same condition as of the date of this Agreement unless otherwise stated. In the event Seller is not able to deliver the Property as stated, Buyer may terminate this Agreement and receive a refund of the Deposit.

7. INSPECTIONS AND SELLER REPRESENTATIONS AND WARRANTIES.

Buyer may enter into any part of the Property at all reasonable times prior to the closing in order to inspect the Property, conduct surveys, test borings and engineering studies and to do such other things as are reasonably necessary with respect to the acquisition and development of the Property. Buyer agrees to return the Property as nearly as possible to its original condition after the completion of all of such tests and inspections. In the event that the inspection reveals defects or conditions which are unacceptable to Buyer, Buyer may terminate this Agreement and receive back the Deposit.

Subject to all matters disclosed in any document delivered to Buyer by Seller or on any exhibit attached hereto, and subject to any information discovered by Buyer or other information disclosed to Buyer by Seller in writing or any other person after the date hereof and prior to the closing, Seller represents and warrants to Buyer that to Seller's actual knowledge, the following are true as of the date of this Agreement and will be true as of the closing:

(a) Except as set forth in the Plan, as may be amended, there are no outstanding pending or threatened liens, claims, rights of first refusal, licenses or encumbrances against or affecting the Property.

(b) All outstanding bills and/or accounts payable concerning the Property are either paid or will be paid prior to or at the time of closing.

(c) There are no outstanding claims, losses or demands against Seller by any person respecting Seller's ownership, use or occupancy of the Property.

(d) The Property has not been used for any dumping of waste materials or landfilling and are free of special wastes, underground storage tanks, radon, asbestos, lead substances, and any 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.

(e) Seller has no knowledge of any boundary disputes or encroachments affecting the Property.

(f) There are rights of ingress and egress in perpetuity from the Property to public highways and roads for vehicular and pedestrian traffic and utilities, except that Seller is currently in the process of obtaining required easements to connect natural gas service to the Portland Technology Park Condominium.

(g) There are no endangered or threatened wildlife or plant habitats and no rivers, streams, great ponds, other bodies of water or wetlands or coastal sand dunes on or adjacent to the Property which, under applicable law would prohibit, limit or restrict Buyer's intended use of the Property.

(h) Seller has received no notices of violation from any Federal or State agency alleging a violation of any environmental law, rule or regulation with respect to the Property;

(i) Seller will have absolute right to sell, assign or transfer the Property to Buyer, after the Portland City Council has approved the sale under the terms herein stated.

All representations and warranties made by Seller herein are made based on Seller's actual knowledge and shall survive the closing of this transaction. Except as set forth herein, Buyer acknowledges that Seller makes no other representations or warranties regarding the Property.

8. CLOSING.

The closing of this transaction shall take place on that date which is sixty (60) days after the Effective Date, at the offices of Bernstein Shur, 100 Middle Street, Portland, Maine. Time is of the essence of this Agreement.

9. DEFAULT AND REMEDIES.

(a) In the event of Buyer's default under any of the terms, covenants or conditions of this Agreement, Seller shall have the right to retain the Deposit and any interest accrued thereon as aforesaid as liquidated damages for the breach and not as a penalty therefor. The Buyer and Seller acknowledge and agree that (i) it is not feasible to determine accurately the measure of damages that will be

caused to Seller by the Buyer's breach because the uniqueness of the Property at its location preclude the utility of comparable figures to determine the extent of damages and (ii) that the amount stated as liquidated damages is agreed to reasonably forecast the amount necessary to compensate Seller for its loss in the light of the circumstances stated in clause (i) and the attendant uncertainties in marketing the Property to another purchaser.

(b) In the event that Seller fails to close hereunder for a reason other than the default of Buyer, Buyer may, as its sole remedy therefor, and subject to the terms of this paragraph, either (i) enforce specific performance of this Agreement against Seller, or (ii) terminate this Agreement and receive the Deposit, plus all interest earned or accrued thereon, except that in the case of any breach of a covenant, representation or warranty of Seller, Buyer shall be entitled, as its sole remedy, to recover its actual damages therefor. Buyer agrees that any recovery against Seller for any breach of Seller's covenants, representations, or warranties hereunder or under any other document delivered by Seller to Buyer or under any law applicable to the Property or this transaction, shall be limited to Buyer's actual damages and that in no event shall Buyer be entitled to seek or obtain any other damages of any kind, including, without limitation, consequential, indirect or punitive damages.

10. **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) Seller shall, at its sole cost and expense, complete any and all additional work necessary to finalize the Declaration of Condominium in order to convey the Property and to delineate the boundaries of the same, which conveyance and delineation shall ensure that the Property is a conforming and approved lot under the City of Portland's zoning and land use laws, ordinances and regulations and not in violation of the State of Maine's subdivision laws, including, but not limited to, M.R.S.A. 30-A § 4401.

(c) Buyer shall determine, in its sole and absolute discretion, that the Property may be used for the construction and operation of a two (2) story, 30,000 square foot, professional office building and that it is satisfied with all local, state and federal zoning and land use laws, ordinances and regulations affecting the Property, including, but not limited to, setback, lot coverage, traffic and parking requirements and, if necessary, the Buyer's ability to construct and install a local, state and federal approved curb cut into the Property from the right of way shown and identified as Easement Area 1 on the Plan.

(d) Buyer shall determine, in its sole and absolute discretion, that it is satisfied with the terms and conditions of the Declaration of Condominium and the bylaws,

plats and plans of said Portland Technology Park Condominium, it being hereby agreed and acknowledged that Seller shall deliver copies of the same to Buyer for review within five (5) days of the Effective Date and that to the extent any modifications are made to said documents pursuant to subsection (b) above, Seller shall promptly notify Buyer of the same.

(e) In the event that any of the foregoing conditions is not satisfied, as determined by Buyer in its sole and absolute discretion, Buyer shall have the option of terminating this Agreement and receiving back the Deposit, except that should any of Seller's representations or warranties prove untrue, then Buyer shall have the right to require Seller, at Seller's expense, to make the Property conform thereto.

11. BINDING EFFECT.

This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, administrators, successors and assigns.

12. ENTIRE AGREEMENT.

This Agreement represents the entire and complete Agreement and understanding between the parties and supersedes any prior agreement or understanding, written or oral, between the parties with respect to the acquisition or exchange of the Property hereunder. This Agreement cannot be amended except by written instrument executed by Seller and Buyer.

13. HEADINGS AND CAPTIONS.

The headings and captions appearing herein are for the convenience of reference only and shall not in any way affect the substantive provisions hereof.

14. GOVERNING LAW.

This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Maine.

15. NOTICE.

Any notice required or permitted under this Agreement shall be deemed sufficient if mailed with first class postage affixed or delivered in person to:

FOR THE SELLER: City of Portland
Attention: City Manager
389 Congress Street
Portland, ME 04101

FOR THE BUYER: Patrons Oxford Insurance Company
P.O. Box 1960
Auburn, Maine 04210
Attn: Mark A. Pettingill, President

Either party may change his address for purposes of this paragraph by giving the other party notice of the new address in the manner described herein.

16. SIGNATURES; MULTIPLE COUNTERPARTS.

This Agreement may be executed in any number of counterparts and by different parties in separate counterparts. Each counterpart when so executed shall be deemed to be an original and all of which together shall constitute one and the same agreement. A signature in a faxed, pdf or other reproduced or electronic document shall be considered the equivalent of an original signature.

17. BROKERS.

Seller and Buyer each represents and warrants that neither has dealt with a real estate broker in connection with this transaction, other than Andrew Ingalls of CBRE The Boulos Company ("CBRE"), whose commission will be paid by Seller pursuant to the terms of a separate agreement to be negotiated between Seller and CBRE. Buyer agrees to indemnify and hold harmless Seller from any claims made by any broker should Buyer's representation in this paragraph be false. Seller agrees to indemnify and hold harmless Buyer from any claims made by any broker should Seller's representation in this paragraph be false. The foregoing indemnities shall include all legal fees and costs incurred in defense against any such claim, and shall survive closing.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals on the day and year first above written.

CITY OF PORTLAND

Sonia Bean
WITNESS

By: Sheila Hill-Christian
Its Acting City Manager

APPROVED AS TO FORM:
CORPORATION COUNSEL'S OFFICE

PATRONS OXFORD INSURANCE COMPANY

Clifford B. Biondi
WITNESS

By: Mark A. Pettingill
Its President

Exhibit A

[See Attached Subdivision Plat of Portland Technology Park Condominium]

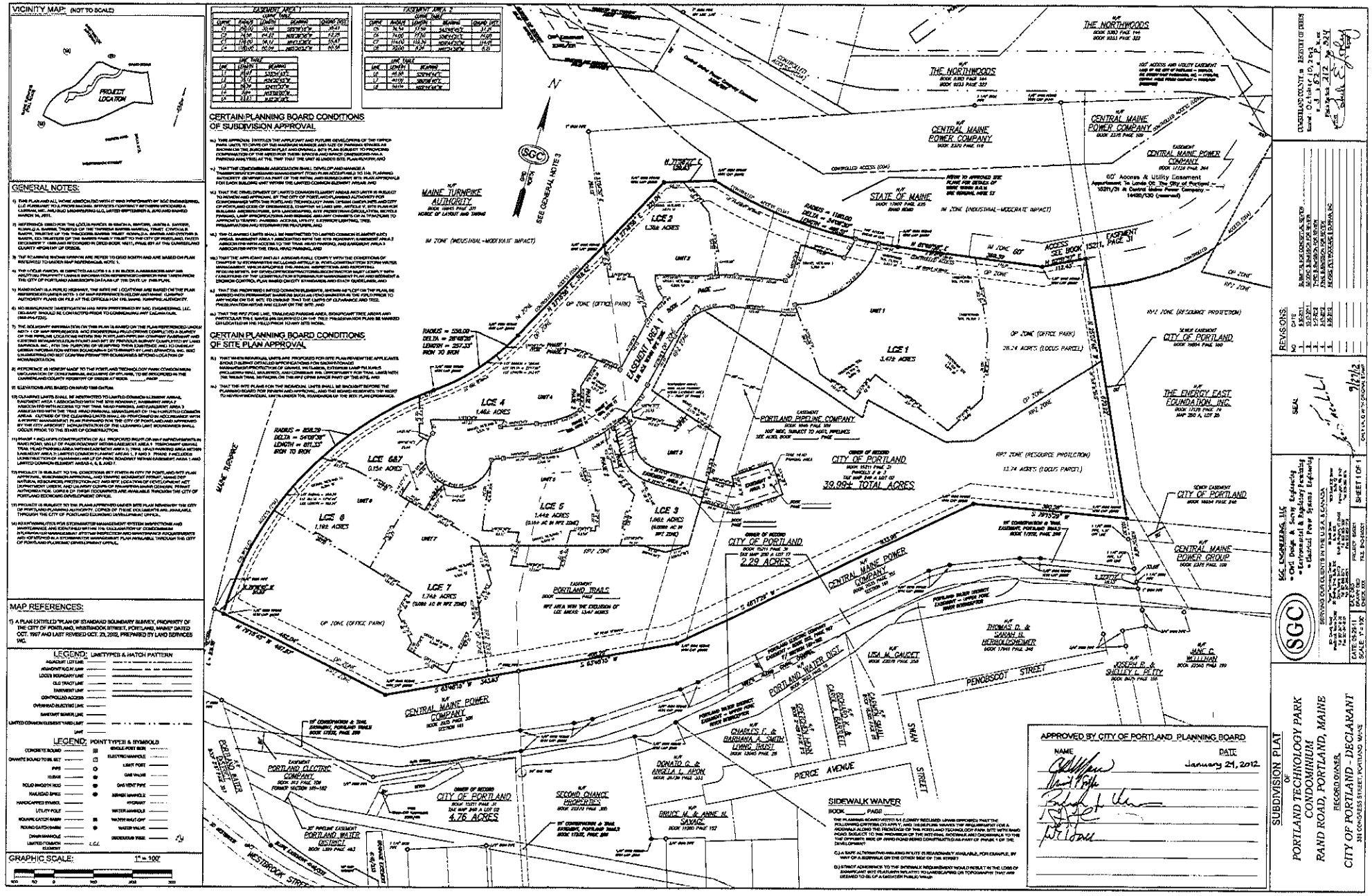

VICINITY MAP: (NOT TO SCALE)
PROJECT LOCATION
GENERAL NOTES:
MAP REFERENCES:
1) A PLAN ENTITLED "PLAN OF STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" DATED OCT. 1997 AND LAST REVISED OCT. 23, 2002, PREPARED BY LAND SERVICES INC.
LEGEND: LINETYPES & HATCH PATTERN
LEGEND: POINT TYPES & SYMBOLS
GRAPHIC SCALE: 1" = 100'
CERTAIN PLANNING BOARD CONDITIONS OF SUBDIVISION APPROVAL
CERTAIN PLANNING BOARD CONDITIONS OF SITE PLAN APPROVAL
LCE 1 3.47± ACRES
LCE 2 1.30± ACRES
LCE 3 1.86± ACRES
LCE 4 1.46± ACRES
LCE 5 1.44± ACRES
LCE 6 1.19± ACRES
LCE 6&7 0.15± ACRES
LCE 7 1.74± ACRES
39.99± TOTAL ACRES
2.29 ACRES
4.76 ACRES
CITY OF PORTLAND
CENTRAL MAINE POWER COMPANY
PORTLAND WATER DISTRICT
PORTLAND PIPELINE COMPANY
THE NORTHWOODS
STATE OF MAINE
MAINE TURNPIKE AUTHORITY
THE ENERGY EAST FOUNDATION, INC.
CENTRAL MAINE POWER GROUP
THOMAS D. & SARAH H. HERRICKHOEMER
LISA M. GAUCET
KEVEN R. & SHELLEY L. PETTY
JANE C. MILLIKAN
CHARLES F. & BARBARA A. SMITH LIVING TRUST
DONATO G. & ANGELA L. APON
BRUCE M. & ANNE H. SAVAGE
SECOND CHANCE PROPERTIES
PIERCE AVENUE
PENOBSCOT STREET
WESTBROOK STREET
SIDEWALK WAIVER
APPROVED BY CITY OF PORTLAND PLANNING BOARD
NAME
DATE
January 24, 2012
SUBDIVISION PLAT OF PORTLAND TECHNOLOGY PARK CONDOMINIUM RAND ROAD, PORTLAND, MAINE
RECORD OWNER: CITY OF PORTLAND - DECLARANT
389 CONGRESS STREET, PORTLAND, MAINE
SGC ENGINEERING, LLC
• Civil Design & Survey Engineering
• Environmental & Regulatory Permitting
• Coastal Flow Systems Engineering
SERVING OUR CLIENTS IN THE U.S.A. & CANADA
SHEET 1 OF 1
REVISIONS
CUMBERLAND COUNTY REGISTRY OF DEEDS
Received: Feb 10, 2012 8:45:41 AM
Bk 30524 Pg 212
Pamela E. Lovley
Register

Exhibit B

[See Attached Plan Depicting Property]

Exhibit B to P&S with Patrons Oxford

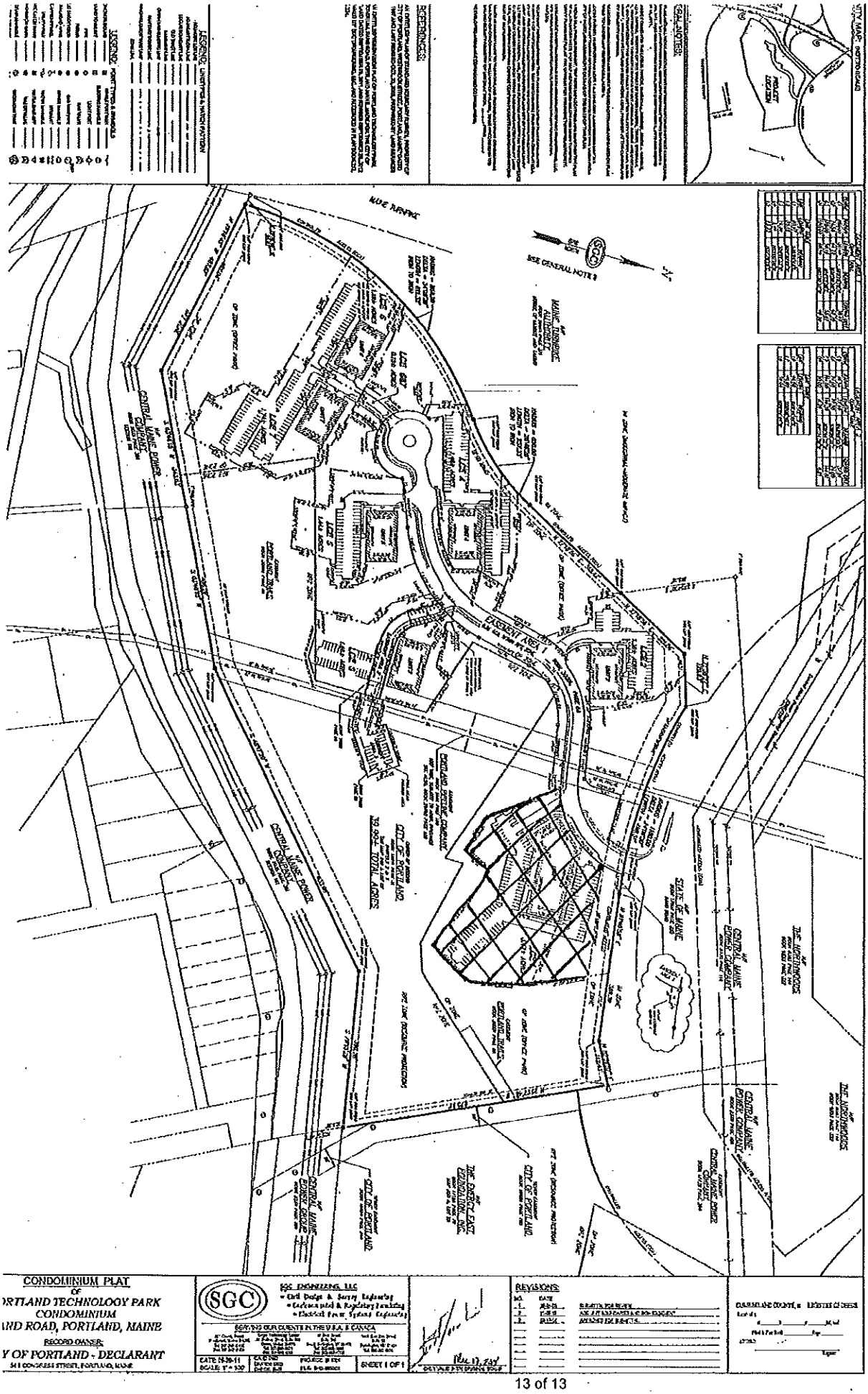


Exhibit C

COMPLIANCE WITH EDA RESTRICTIVE COVENANTS

The Seller and Buyer acknowledge that the Property was improved, in part, with funding from the United States Economic Development Administration (EDA), United States Department of Commerce, EDA Project Number 01-01-08630 and is subject to the terms and conditions of the EDA financial assistance award. Consequently, all recipients or owners and/or their successors and assigns, agree as follows:

Real Property or tangible Personal Property improved with EDA Investment Assistance must be used in a manner that is consistent with the authorized general and specific purposes of the Award, in this case, commercial purposes and EDA policies concerning adequate consideration and environmental compliance; and any applicable provisions of 13 CFR §314. It may not be used in violation of the nondiscrimination requirements set forth in 13 C.F.R. §302.20 or for inherently religious activities prohibited by applicable federal law.

Buyer agrees to provide Seller and/or EDA with any document, evidence or report required to assure compliance with federal and state law, including, but not limited to, applicable federal and state environmental laws.

The use of the Property, (improved with EDA assistance), for any purpose other than the authorized purpose of the EDA grant, which in this case is commercial uses, is prohibited. This covenant shall remain in effect for a period of twenty (20) years.

Patrons Oxford Insurance Company
P.O. Box 1960 Auburn, ME 04211-1960

CHECK NO. **8003231**

INVOICE DATE	DESCRIPTION	NET CHECK AMOUNT
3/16/2015	000000133545 DEPOSIT FOR LAND PARCEL	$20,000.00
	CHECK TOTAL	$20,000.00

THIS DOCUMENT CONTAINS A WATERMARK ON BACK

Patrons Oxford Insurance Company
P.O. Box 1960 Auburn, ME 04211-1960

Bangor Savings Bank
Bangor, Maine

52-7438
2112

8003231

VENDOR ID	DATE ISSUED
BOUCOM	3/16/2015

PAY: *Twenty thousand and 00/100 Dollars*

PAY $*****20,000.00
Void if not cashed within 180 days

TO THE ORDER OF: BOULOS COMPANY

AUTHORIZED SIGNATURE

⑈8003231⑈ ⑆211274382⑆ 40203505821⑈

Addendum 1 to Purchase and Sale Agreement

This Addendum 1 to Purchase and Sale Agreement ("Addendum 1") dated as of July 30, 2015, supplements and amends that certain Purchase and Sale Agreement dated March 19, 2015 by and between Patrons Oxford Insurance Company, as Buyer, and the City of Portland, as Seller, as amended by that certain Extension to Purchase and Sale Agreement dated April 29, 2015 and that certain Second Extension to Purchase and Sale Agreement dated June 7, 2015 (collectively, the "Agreement") to which Agreement this Addendum 1 is attached and incorporated therein by reference. In the event that any provision in this Addendum 1 shall conflict in whole or in part with any of the terms contained in the Agreement, the provisions of this Addendum 1 shall control and any conflicting terms of the Agreement are hereby considered amended and revised hereby:

1) The first two recitals in the main body of the Agreement are hereby deleted in their entirety and replaced with the following:

WHEREAS, Seller owns a parcel of land located at the Portland Technology Park, City of Portland, County of Cumberland, State of Maine, being known as Unit 4 and LCE #4 on that certain Subdivision Plat of Portland Technology Park Condominium, Rand Road, Portland, Maine dated September 29, 2011 and last revised on May 1, 2015, prepared by SGC Engineering, LLC for the City of Portland – Declarant, approved by the City of Portland Planning Board on March 10, 2015 and recorded in the Cumberland County Registry of Deeds on June 19, 2015 in Book 215, Page 250 (the "Plan," a copy of which is attached hereto as Exhibit A) and being further described as Unit 4 of the condominium known as the Portland Technology Park Condominium of which the Seller is the declarant as described in that certain Declaration of Condominium for the Portland Technology Park to be recorded in the Cumberland County Registry of Deeds (the "Declaration of Condominium"), together with all improvements, fixtures and rights appurtenant thereto, all as more particularly shown and depicted as the cross-hatched lot on the Condominium Plat of Portland Technology Park Condominium dated September 29, 2011 and last revised on March 17, 2014, prepared by SGC Engineering, LLC for the City of Portland – Declarant shown on Exhibit B attached hereto and made part hereof (the "Condominium Plat"). Title reference is made to a deed from Simon A. Snyder et alia to the City of Portland dated December 7, 1999 and recorded in the Cumberland County Registry of Deeds, Book 15211, Page 31; and

WHEREAS, at Buyer's request, and subject to approval by the Portland Planning Board, Seller intends to make amendments to the Plan and the Condominium Plat including adjusting the boundaries of Unit #4, LCE #4, and Easement Area 1 as generally depicted on the Proposed Site Plan , which is attached hereto as Exhibit C and made a part hereof, in order to accommodate Buyer's planned development of Unit #4 and LCE #4 (Unit #4 and LCE #4 as amended and generally depicted on Exhibit C are referred to collectively as the "Property"); and

WHEREAS, subject to approval by the Portland Planning Board of amendments to the Plan and the Condominium Plat adjusting the boundaries of Unit #4, LCE #4, and Easement Area 1 in substantially the manner depicted on Exhibit C, Seller intends to sell and Buyer desires to acquire the Property.

It is therefore the intent hereof that all previous references in the Agreement to Unit 1 and LCE #1 are hereby deleted and replaced with references to Unit 4 and LCE #4. It is further the intent hereof that the new Exhibit A and Exhibit B attached hereto shall replace the original such Exhibits attached to the main body of the Agreement.

2) Section 2 of the main body of the Agreement is hereby deleted in its entirety and replaced with the following:

The consideration for the property shall be One Hundred Fifty Thousand Dollars ($150,000.00) (the "Purchase Price") payable as follows:

(a) A deposit of Twenty Thousand Dollars ($20,000.00) has been paid by Buyer and will continue to be held by Buyer's agent, Andrew Ingalls of CBRE The Boulos Company, until closing and applied to the Purchase Price (or, if applicable, until returned to Buyer pursuant to this Agreement) (the "Deposit"); and

(b) The Purchase Price, less the Deposit, to be paid by Buyer to Seller at closing by wire transfer, certified check or bank cashier's check, subject to the adjustments provided for in this Agreement.

This is a cash purchase and no financing is required.

3) Section 8 of the main body of the Agreement is hereby deleted in its entirety and replaced with the following:

The sale price of $150,000 has been discounted by a fixed amount of $215,000, which represents the Buyer's cost of extending to the Property the public road and utilities located in Easement Area 1, per Section 4 of this Addendum. The closing of this transaction shall take place on or before that date which is ninety (90) days after the date of full execution of this Addendum 1, at the offices of Bernstein Shur, 100 Middle Street, Portland, Maine. Time is of the essence of this Agreement.

4) Section 10(b) of the main body of the Agreement is hereby deleted in its entirety and replaced with the following:

Seller shall, at its sole cost and expense, complete any and all additional work necessary to finalize the Declaration of Condominium in order to convey the Property and to delineate the boundaries of the same, which conveyance and delineation shall ensure that the Property is a conforming and approved lot under the City of Portland's zoning and land use laws, ordinances and regulations and not in violation of the State of Maine's subdivision laws, including, but not limited to, M.R.S.A. 30-A § 4401. In addition, Seller shall, at its sole cost and expense, obtain final, unappealable approval from the Portland Planning Department or Board, as may be required, for the amendments to the Plan and the Condominium Plat including adjustments to the boundaries of Unit #4, LCE #4, and Easement Area 1 as generally depicted on said Exhibit C, in order to accommodate Buyer's planned development of the Property.

5) The following new Section 18 is hereby added to the Agreement:

18. **Extension of Right-of-Way and Utilities.** Upon Buyer's closing on the purchase of the Property pursuant to this Agreement, the Seller hereby agrees and acknowledges that Buyer shall have the obligation, at its sole cost and expense, to design and construct an extension of the existing right-of-way and utilities (including water, sewer, electricity, and telecommunications) within the Condominium (which right-of-way is known as Easement Area 1 and is shown on the Plan) from its current terminus at the end of the so-called "Phase 1" (as shown on the Plan) for an additional one hundred feet (100') to the first entrance to the Property, all as generally depicted and described on Exhibit C (the 100' section of said right-of-way and the associated utility facilities are referred to herein collectively as the "New Road"). Prior to commencing its construction of the New Road, Buyer shall first obtain Seller's written approval for the final plans and specifications for such improvements, which approval shall not be unreasonably withheld, conditioned or delayed. The construction of the New Road shall be completed by Buyer's contractors in a good workmanlike manner and in accordance with all applicable federal, state, and local laws, rules, regulations, and ordinances. In order to ensure that Buyer is able to complete such construction and extension of the New Road pursuant to this Section 18, Seller hereby agrees to cooperate with Buyer at all times and to deliver, and if applicable and where appropriate, to assign, to Buyer and Buyer's contractor any information, reports, permits, approvals, or other due diligence materials in its possession which will reasonably assist Buyer and Buyer's contractors in the completion of the work described in this Section 18. In addition, if and when required, the Seller shall grant to Buyer any necessary easements or licenses which may be required by Buyer in order complete such construction and extension of said right-of-way and/or obtain the necessary permits and approvals in connection with the same. Any such easements and licenses shall be in a form satisfactory to the Seller. The terms and conditions of this Section 18 shall expressly survive the closing on the purchase of the Property pursuant to this Agreement.

6) The following new Section 19 is hereby added to the Agreement:

19. **Right of Seller to Repurchase Property**. If construction of the New Road is not completed, pursuant to the terms and conditions of this Agreement, within 18 months after the closing date, the Seller shall have the right, but not the obligation to repurchase the Property at the Purchase Price. This option to repurchase shall survive the closing on the purchase of the Property pursuant to this Agreement, shall be included in Seller's deed to Buyer, and shall run with the land.

7) Except as specifically modified hereby, all other terms and conditions of the Agreement remain in full force and effect.

SELLER
City of Portland

By: _____
Name: Jon P. Jennings Date 7/30/15
Title: City Manager

BUYER
Patrons Oxford Insurance Company

By: _____ 7/30/15
Name: Mark A. Pettingill Date
Title: President

APPROVED AS TO FORM:

_____
CORPORATION COUNSEL'S OFFICE

Exhibit A to Addendum 1

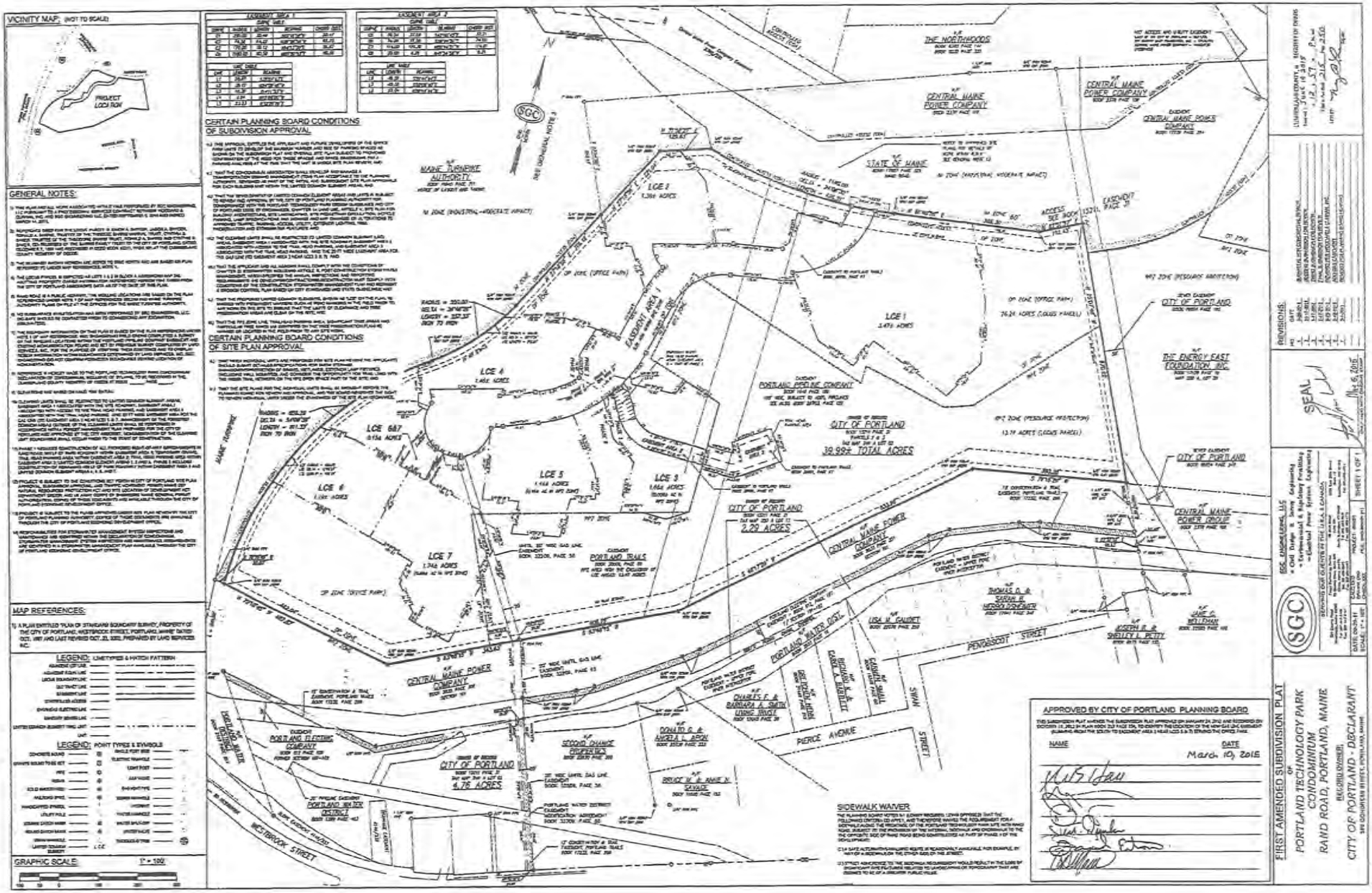


Exhibit B to Addendum 1

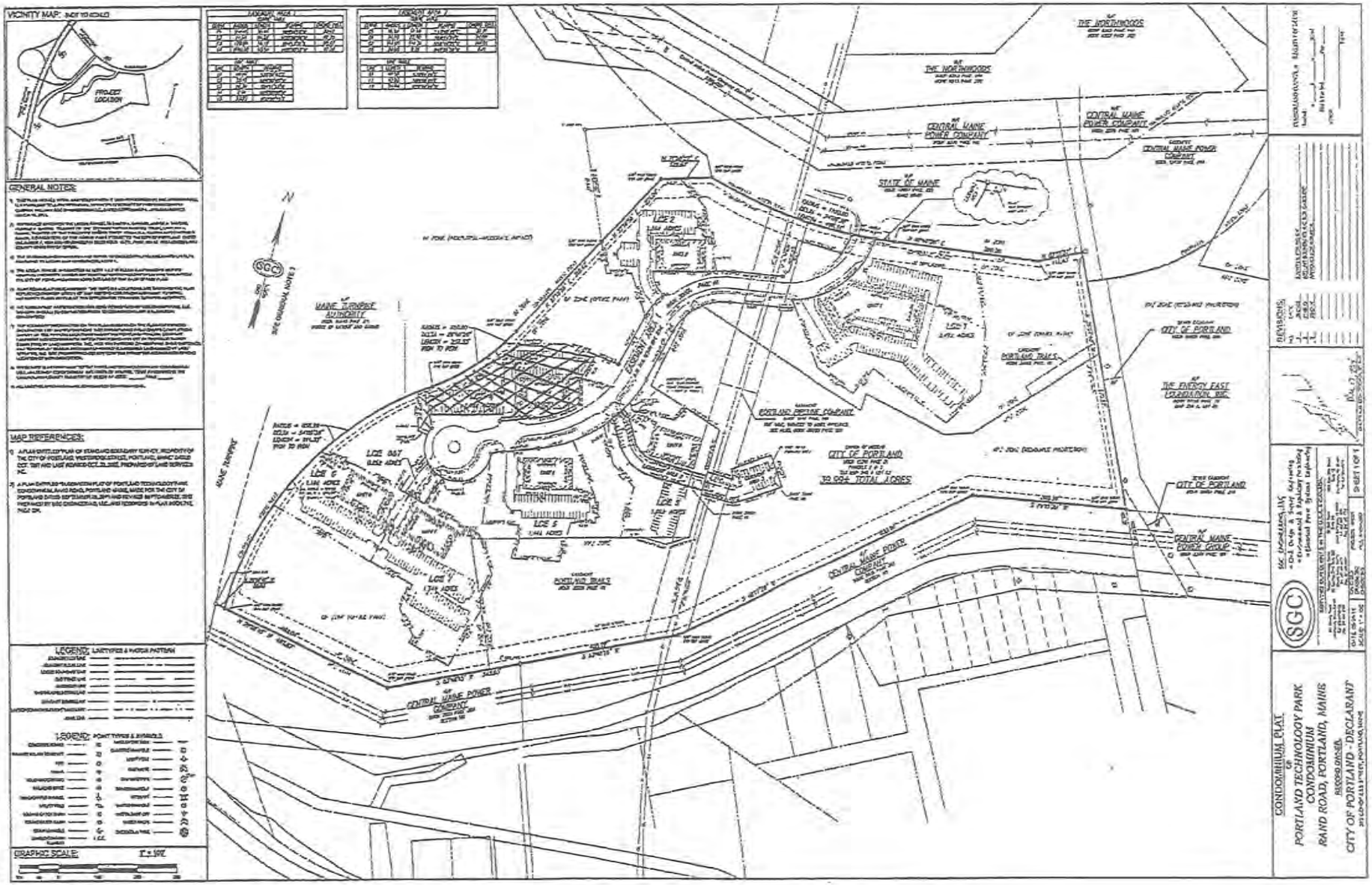
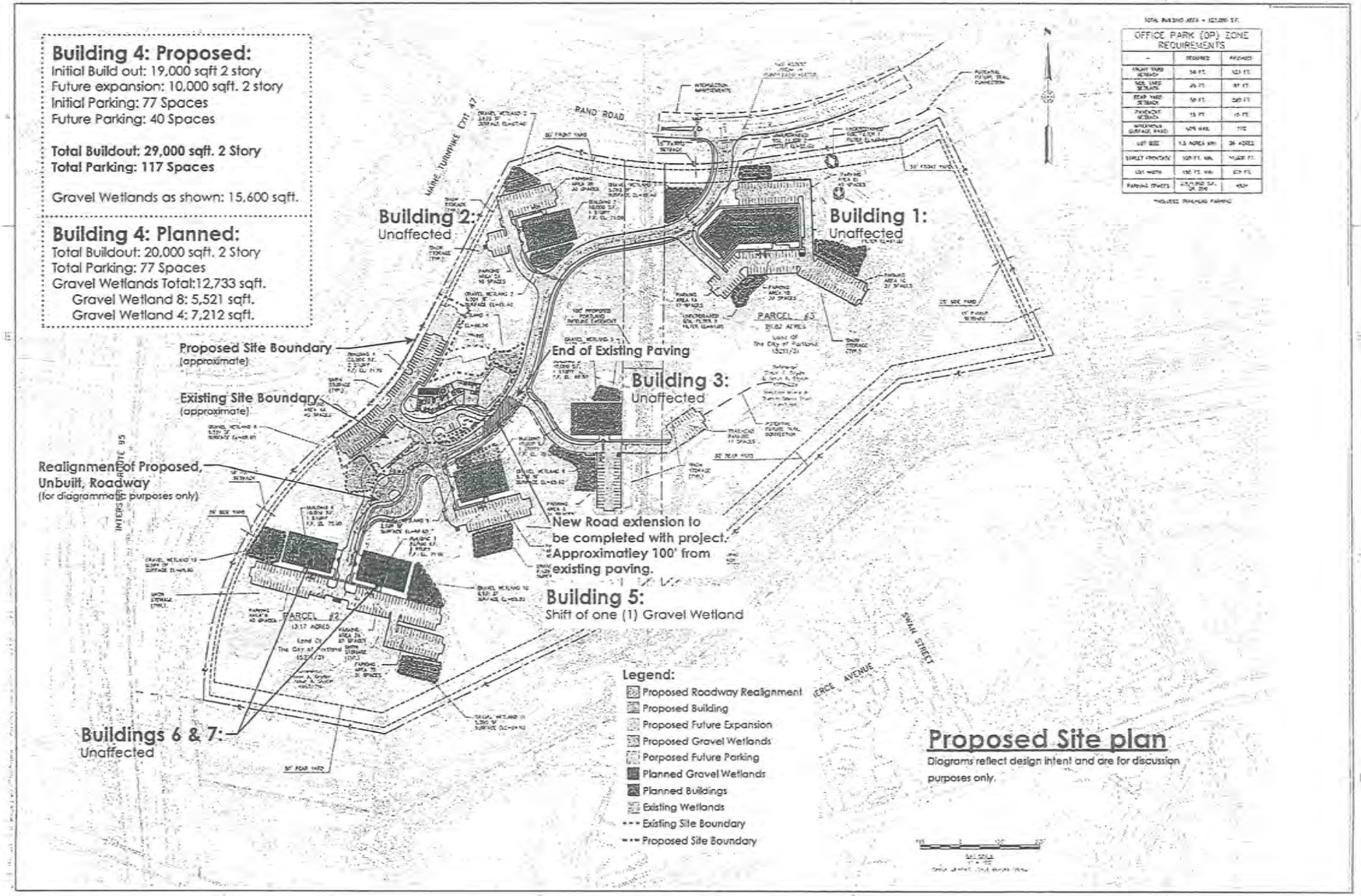


Exhibit C to Addendum 1



8. EVIDENCE OF FINANCIAL & TECHNICAL CAPACITY

8.1 FINANCIAL CAPACITY

LCE 4 of the Portland Technology Park will be funded by the Patrons Oxford Insurance Company, which has executed a purchase and sale agreement for the property with the City of Portland. Patrons Oxford Insurance Company is a wholly owned stock subsidiary of Quincy Mutual Fire Insurance Company (QMFIC); QMFIC has the financial capacity to finance the purchase and construction costs associated with the proposed project without resorting to external funding sources, as demonstrated by the letter attached to this Section. LCE 4 of the Portland Technology Park project has an estimated project cost of $5 million.

8.2 TECHNICAL CAPACITY

Scott Simons Architects is the architect for the project and Woodard & Curran is the civil engineering firm completing the site design and permitting for the project. Woodard & Curran completed the original design and permitting for the Technology Park, and worked with Scott Simons Architects to develop the "Design Guidelines for Portland Technology Park," which are being used as the basis for this project. Both Woodard & Curran and Scott Simons Architects have significant experience completing similar types of development projects in Maine, and specifically in Portland. Richardson & Associates is the Landscape Architect on the project, and they have experience with similar types of development as well.

Resumes or additional company information for Woodard & Curran, other consultants referenced within this application, or key personnel involved in preparing this application can be provided upon request.

8.3 ATTACHMENTS

- Financial Capacity Letter

QUINCY MUTUAL GROUP

September 18, 2015

Planning Board of the
City of Portland
389 Congress Street
Portland, Maine 04101

Re: Purchase and proposed development of Site 4 in Portland Technology Park by Patrons Oxford Insurance Company

Dear Chairperson:

Patrons Oxford Insurance Company ("Patrons Oxford") has executed a purchase and sale agreement for Site 4 within the Portland Technology Park project in Portland, Maine, and soon expects to file development plans to construct its home office on that lot.

Patrons Oxford is a wholly owned stock subsidiary of Quincy Mutual Fire Insurance Company ("QMFIC"). As of December 31, 2014, the policyholder surplus (i.e., net worth) of QMFIC was in excess of $994 Million.

We believe this project is quite economically feasible for Patrons Oxford to undertake. As a member of the Quincy Mutual Group, Patrons Oxford clearly has the financial and business capability to close on the purchase of Site 4 and thereafter to successfully complete this building project. QMFIC currently intends to finance the purchase and construction costs for Site 4 without resort to external funding sources.

We appreciate the Planning Board's speedy review and consideration of the development plans of Patrons Oxford for Site 4. Should you have any questions I would be happy to discuss this matter further. Please do not hesitate to call me directly at (617) 770-5199 anytime.

Sincerely,

James Moran

James J. Moran, Jr.
Executive Vice President, Secretary
& General Counsel

JJM/sec

COMMITMENT & INTEGRITY
DRIVE RESULTS

41 Hutchins Drive
Portland, Maine 04102
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

MEMORANDUM

TO: Jean Fraser, City of Portland Planner
FROM: Portland Technology Park Team
DATE: November 4, 2015
RE: Portland Technology Park LCE 4 Development – Neighborhood Meeting Certification

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Woodard & Curran hereby certifies that a neighborhood meeting was held on October 26, 2015 at Hall Elementary School, 23 Orono Road, Portland, Maine at 7:00 PM. The meeting was attended only by representatives of Scott Simons Architects (Ryan Kanteres and Blaise Maccarrone) and Woodard & Curran (Dave Senus and Lauren Swett)

We also certify that on October 16, 2015, invitations were mailed to all addresses on the mailing list provided by the Planning Division, including property owners within 500 feet of the proposed development and residents on an "interested parties" list that was provided. The invitation was also sent via digital copy to the Planning Department.

Signed,

WOODARD & CURRAN INC.

Lauren Swett

Lauren Swett, PE
Project Engineer

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in Sheet
3. Copy of presentation

COMMITMENT & INTEGRITY
DRIVE RESULTS

41 Hutchins Drive
Portland, Maine 04102
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

October 16, 2015

Dear Neighbor:

On behalf of Patrons Oxford Insurance (Applicant), please join us for a neighborhood meeting to discuss our plans for the proposed development of Limited Common Element (LCE or lot) 4 in the Portland Technology Park located at the southeast corner of Rand Road and Exit #47 of the Maine Turnpike in Portland. A Level III Site Plan Application for the LCE 4 development has been filed with the City of Portland Planning Division on behalf of the Applicant, Patrons Oxford Insurance. A Subdivision Amendment for changes to the Technology Park layout has been filed concurrently on behalf of the Applicant City of Portland.

Meeting Location: Hall School, 23 Orono Road, Portland, Maine

Meeting Date: Monday, October 26, 2015

Meeting Time: 7:00PM

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.

The Portland Technology Park is a previously approved Office Park Planned Unit Development (OP-PUD), near the I-95 interchange (Exit #47) in the City of Portland, Maine. The City of Portland owns the approximately 40-acre site, and received Planning Board Approval for the Portland Technology Park in January 2012. Construction of the first phase of the roadway has been completed. Patrons-Oxford Insurance Company is proposing the development of LCE 4 of the Portland Technology Park. A purchase & sale agreement has been executed between Patrons-Oxford Insurance Company and the City of Portland. LCE 4 will be the first developed lot within the Portland Technology Park.

Patrons-Oxford Insurance Company is proposing to develop LCE 4 with a 2-story, 19,000 square foot office building. The project will include the construction of associated parking areas, stormwater management systems, utility infrastructure, and landscaping features around the building. Construction is anticipated to occur in 2016.

If you should have any questions, please contact Lauren Swett at (207) 558-3763 or via email at lswett@woodardcurran.com.

Sincerely,

WOODARD & CURRAN INC.

Lauren Swett

Lauren Swett, PE
Project Engineer

Note: Under Section 14-524(a)3.c.,of the City Code of Ordinances, an applicant for a Level III Site Plan is required to hold a neighborhood meeting upon filing an application with the City of Portland.

COMMITMENT & INTEGRITY
DRIVE RESULTS

41 Hutchins Drive
Portland, Maine 04102
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

MEMORANDUM

TO: City of Portland Planning Department
FROM: Portland Technology Park Team
DATE: October 26, 2015
RE: Portland Technology Park LCE 4 Development Neighborhood Meeting Sign-in Sheet

Dear Neighbors,

Thank you for attending tonight's public Neighborhood Meeting on the Portland Technology Park LCE 4 Development project. Please sign in below.

Thank you,
Portland Technology Park LCE 4 Development Project Team

Name	Address
Ryan Kantgress	136 Clark St Portland, ME
Blaise Maccarrone	116 Clark St, Ptld, ME
Dave Senus	Woodard & Curran Inc
Lauren Swett	Woodard + Curran



PORTLAND TECHNOLOGY PARK

Level III Site Plan Applicant:

PATRONS INSURANCE
For all the things you value.

Subdivision Amendment Applicant:

CITY OF PORTLAND, MAINE · RESURGAM

LIMITED COMMON ELEMENT 4

Neighborhood Meeting Presentation

Monday, October 26, 2015

WOODARD &CURRAN

Woodard & Curran:
Site Design &
Permitting

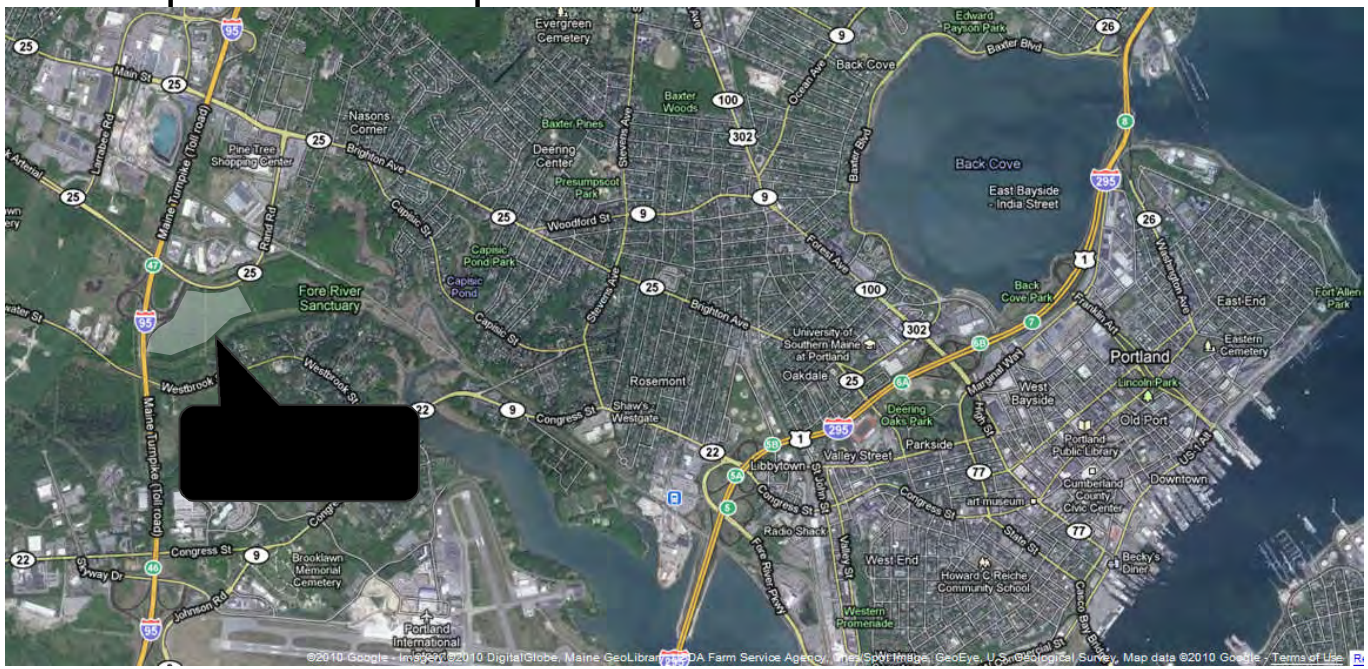
SSA Scott Simons Architects

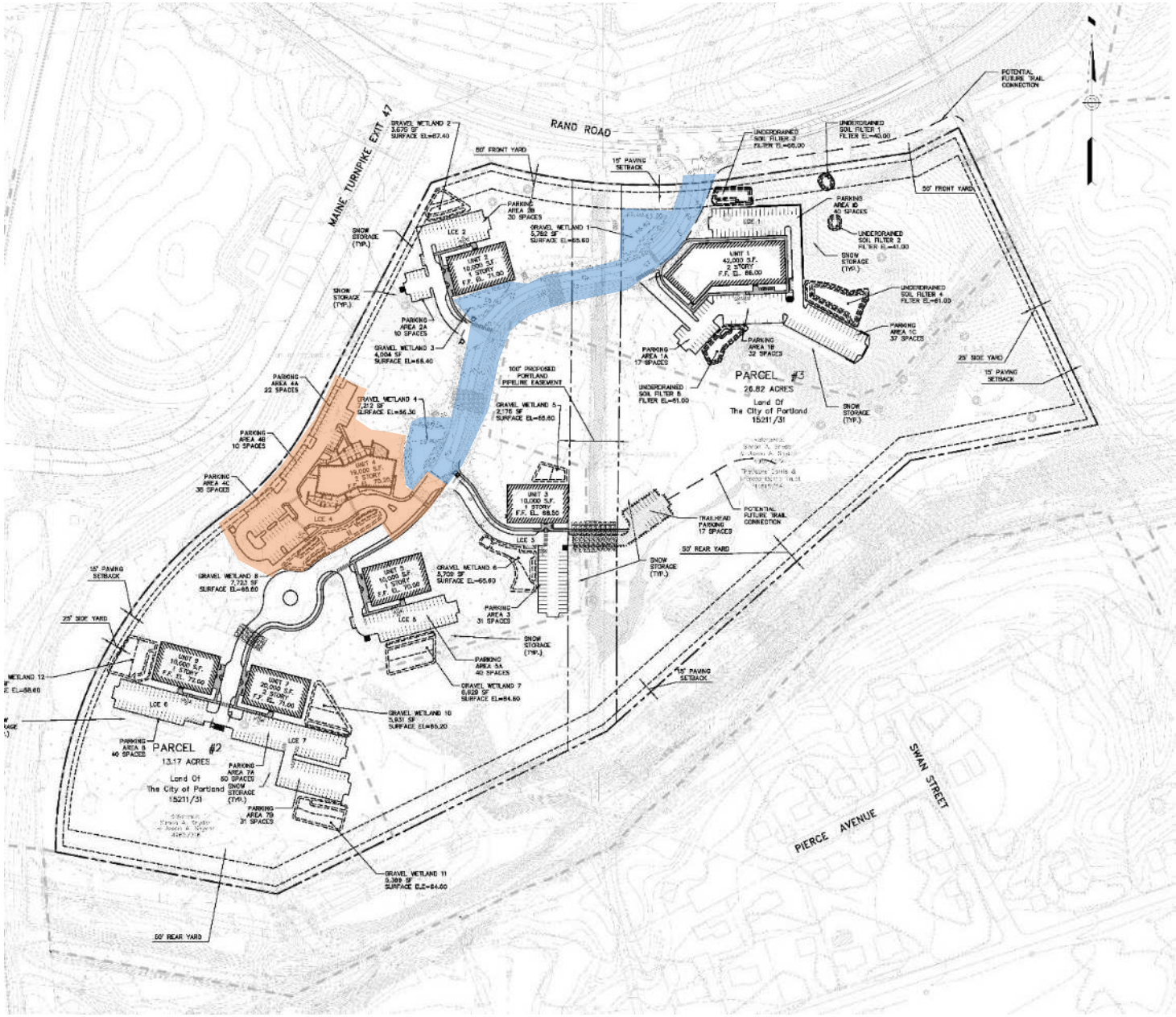
Scott Simons Architects:
Building Architecture

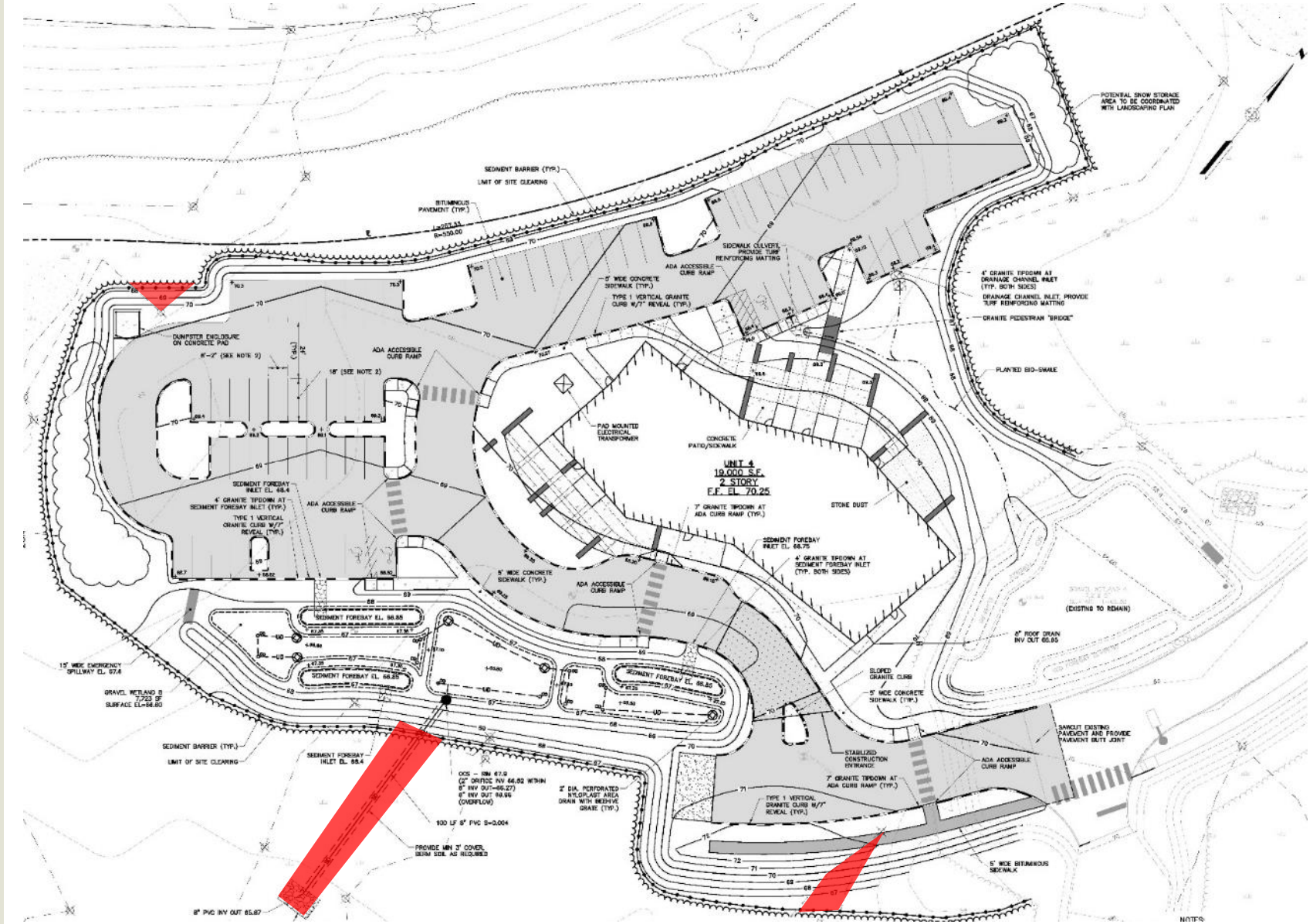
Richardson & Associates:
Landscape Architecture

Portland Technology Park – LCE 4

- Portland Technology Park History
  - Prior Approvals
- Limited Common Element (LCE or Lot) 4
  - Proposed Development




MAINE TURNPIKE EXIT 47
RAND ROAD
PARCEL #2
13.17 ACRES
Land Of
The City of Portland
15211/31
PARCEL #3
26.82 ACRES
Land Of
The City of Portland
15211/31
PIERCE AVENUE
SWAN STREET
50' FRONT YARD
50' REAR YARD
25' SIDE YARD
15' PAVING SETBACK
100' PROPOSED PORTLAND PIPELINE EASEMENT
POTENTIAL FUTURE TRAIL CONNECTION
TRAILHEAD PARKING 17 SPACES
SNOW STORAGE (TYP.)


POTENTIAL SNOW STORAGE AREA TO BE COORDINATED WITH LANDSCAPING PLAN
SEDIMENT BARRIER (TYP.)
LIMIT OF SITE CLEARING
BITUMINOUS PAVEMENT (TYP.)
SIDEWALK CULVERT, PROVIDE TURF REINFORCING MATTING
ADA ACCESSIBLE CURB RAMP
5' WIDE CONCRETE SIDEWALK (TYP.)
TYPE 1 VERTICAL GRANITE CURB W/7" REVEAL (TYP.)
4' GRANITE TIPDOWN AT DRAINAGE CHANNEL INLET (TYP. BOTH SIDES)
DRAINAGE CHANNEL INLET, PROVIDE TURF REINFORCING MATTING
GRANITE PEDESTRIAN "BRIDGE"
PLANTED BIO-SWALE
DUMPSTER ENCLOSURE ON CONCRETE PAD
8'-2" (SEE NOTE 9)
18' (SEE NOTE 2)
PAD MOUNTED ELECTRICAL TRANSFORMER
CONCRETE PATIO/SIDEWALK
UNIT 4
19,000 S.F.
2 STORY
F.F. EL 70.25
STONE DUST
7' GRANITE TIPDOWN AT ADA CURB RAMP (TYP.)
SEDIMENT FOREBAY INLET EL. 68.4
4' GRANITE TIPDOWN AT SEDIMENT FOREBAY INLET (TYP.)
SEDIMENT FOREBAY INLET EL. 68.75
4' GRANITE TIPDOWN AT SEDIMENT FOREBAY INLET (TYP. BOTH SIDES)
(EXISTING TO REMAIN)
6" ROOF DRAIN INV OUT 65.85
SLOPED GRANITE CURB
SAWCUT EXISTING PAVEMENT AND PROVIDE PAVEMENT BUTT JOINT
STABILIZED CONSTRUCTION ENTRANCE
7' GRANITE TIPDOWN AT ADA CURB RAMP (TYP.)
TYPE 1 VERTICAL GRANITE CURB W/7" REVEAL (TYP.)
5' WIDE BITUMINOUS SIDEWALK
SEDIMENT FOREBAY EL. 68.85
15' WIDE EMERGENCY SPILLWAY EL. 67.8
GRAVEL WETLAND B
7,723 SF
SURFACE EL=64.80
SEDIMENT BARRIER (TYP.)
LIMIT OF SITE CLEARING
SEDIMENT FOREBAY INLET EL. 68.4
OCS — RIM 67.0
(2" ORIFICE INV 66.52 WITHIN 8" INV OUT=66.27)
8" INV OUT 66.66
(OVERFLOW)
2' DIA. PERFORATED NYLOPLAST AREA DRAIN WITH BEEHIVE GRATE (TYP.)
100 LF 8" PVC S=0.004
PROVIDE MIN 3' COVER, DERM SIDE AS REQUIRED
8" PVC INV OUT 65.87
NOTES:


Limit of Planting
Shrub planting - see L-2.1
Deciduous Tree Planting, Typ.
EXISTING WETLAND
PARKING #1 (SEE CIVIL DRAWINGS)
GRAVEL WETLAND
BACK TERRACE
RECREATION AREA
Evergreen Tree Planting, Typ.
PARKING #2 (SEE CIVIL DRAWINGS)
BUILDING
ENTRY/DROP-OFF
FRONT TERRACE
PARKING #3 (SEE CIVIL DRAWINGS)
PARKING #4 (SEE CIVIL DRAWINGS)
GRAVEL WETLAND (SEE CIVIL DRAWINGS)





THANK YOU!

QUESTIONS?

WOODARD &CURRAN

3. PROJECT DESCRIPTION

3.1 INTRODUCTION

The Portland Technology Park is a previously approved Office Park Planned Unit Development (OP-PUD), near the I-95 interchange (Exit #47) in the City of Portland, Maine. The attached map shows the project location. The property is located within the Office-Park (OP) Zone and the Resource Protection (RP) Zone. The City of Portland owns the approximately 40-acre site, and received Planning Board Approval for the Portland Technology Park in January 2012. Construction of the first phase of the roadway, approximately 975 linear feet of road to the Building 3 entrance, has been completed.

Patrons-Oxford Insurance Company is proposing the development of Limited Common Element (LCE) 4 of the Portland Technology Park. A purchase & sale agreement has been executed between Patrons-Oxford Insurance Company and the City of Portland and will be referred to as part of the discussion on title, right, or interest later in this report.

The original site plan application for the Portland Technology Park was submitted by the City of Portland Economic Development Office on November 5, 2010. This new Level III Site Plan Application is being submitted by Patrons-Oxford Insurance Company for the Development of LCE 4. The proposed lot layout for LCE 4 differs from the plans submitted with the original application, and some minor changes to the roadway alignment and adjacent lots are required to accommodate the new lot layout. This application includes plans that show all of those changes. A concurrent application by the City of Portland for a Subdivision Amendment to address the road and LCE boundary modifications is also being submitted. Once the Subdivision Amendment has been reviewed by the City, we will update the boundary linework on the LCE 4 plans.

3.2 PREVIOUS APPROVALS AND CONDITIONS

On January 24, 2012, the Portland Planning Board approved a Level III Final Site Plan and Subdivision application for the Portland Technology Park. At that time, they also approved a Traffic Movement Permit as well as a sidewalk waiver for the frontage of the Portland Technology Park along Rand Road. The following Subdivision and Site Plan conditions of approval are pertinent to the Level III Site Plan application being submitted for the proposed LCE 4 development.

3.2.1 Subdivision

- Condition iv. This approval entitles the applicant and future developers of the office park units to develop the maximum number and size of parking spaces as shown on the Subdivision Plat and Overall Site Plan subject to providing confirmation of the need for these spaces and space dimensions (via a parking analysis) at the time that the unit is under site plan review.
    - The proposed parking lots for LCE 4 include 8 fewer spaces than originally proposed for the property, reflecting the reduction of building footprint from 20,000 square feet to 19,000 square feet. The parking space size of 18' x 8'2" shown on the approved Technology Park plans is being proposed for the LCE 4 parking lots. A parking analysis addressing the parking space count and size is included as part of this application.
- Condition v. That the condominium association shall develop and manage a Transportation Demand Management (TDM) plan acceptable to the Planning Authority, reviewed as part of the initial and subsequent site plan approvals for each building unit within the limited common element areas.
    - A TDM is currently being developed by Gorrill Palmer and will be submitted under separate cover.

- Condition vi. That the development of limited common element areas is subject to review and approval by the City of Portland Planning Authority for conformance with the Portland Technology Park Design Guidelines and City of Portland Code of Ordinances, Chapter 14 Land Use, Article v. Site Plan for building architecture, site landscaping, site pedestrian circulation, bicycle parking, lamp specifications, and signage and any changes or alterations to approved traffic, parking, access, utility, exterior lighting, tree preservation and stormwater features.
    - This application for Level III Site Plan Approval is being submitted to comply with this Subdivision Condition.

3.2.2 Site Plan

- Condition iii. That when individual units are proposed for site plan review the applicants should submit detailed specifications for snow storage management/protection of gravel wetlands, exterior lamp fixtures (including wall mounted), and consider the opportunity for trail links with the wider trail network on the RPZ open space part of the site.
    - Locations of possible snow storage areas, away from gravel wetlands, have been identified on the site plan. These areas are currently being reviewed, and will be coordinated with the landscaping plan as required. When final snow management and snow storage considerations have been made, updated plans will be provided.

      Site lighting has been reviewed, and a photometric plan has been provided with this application. Lighting fixtures will be addressed later in this report.

      The LCE 4 lot is not in the RPZ zone, and is not located such that trails could be incorporated directly into the site. Sidewalks and crosswalks from the site will be connected with future lot development to allow for easy access to the trail system from LCE 4. Many informal trails exist on the overall Technology Park property, including on lots across from LCE 4. Informal connections to these trails are likely to develop over time.
- Condition iv. That the site plans for individual units shall be brought before the Planning Board for review and approval, and the Board reserves the right to review individual units under the standards of the site plan ordinance.
    - This application for Level III Site Plan Approval for LCE 4 is being submitted to comply with this Site Plan Condition.

3.3 PROJECT PURPOSE AND NEED

The building size/location/orientation, parking demand, parking layout, utility connections, stormwater management systems and other site amenities will need to be modified from the previously permitted design to meet the needs of Patrons-Oxford Insurance. The revised orientation of the building and associated site amenities will require a slight shift of the roadway alignment to the east, in addition to a modification of the layout of several of the adjacent lots within the Portland Technology Park, which are owned by the City of Portland.

3.4 EXISTING CONDITIONS

The Existing Conditions Plan, included in the drawings submitted with this application, depicts the existing conditions of the Portland Technology Park (the Site) including LCE 4. No portion of the development is within the 100-year flood plain; a FEMA flood zone map was provided as part of the original application. Refer to the original application dated November 5, 2010, for additional information.

The Site is currently undeveloped, except for the portion of the roadway that has been constructed. Topography is relatively flat in the areas of proposed development. Several areas of forested wetlands border the perimeter of the Site; a wetland delineation and functional assessment was first conducted by Dames and Moore for the site in May 1998. The City followed up with a wetland reconnaissance in December 2006 by S.W. Cole and hired URS to perform a vernal pool assessment in April and May 2006; copies of these reports were provided as part of the original application.

Boyle Associates completed an evaluation of the wetlands and vernal pools as part of a City-wide Wetland Compensation Opportunities Assessment in July 2009. Boyle Associates then revisited the site in early December 2010 to collect additional information and complete the Vernal Pool Assessment forms to file with Maine Department of Environmental Protection (MDEP) & the Department of Inland Fisheries and Wildlife (IF&W). None of the potential vernal pools identified by URS and Boyle Associates have the criteria necessary to be classified as "significant vernal pools" by the NRPA rules and none of the wetlands in the area of the proposed Site are classified as "wetlands of special significance".

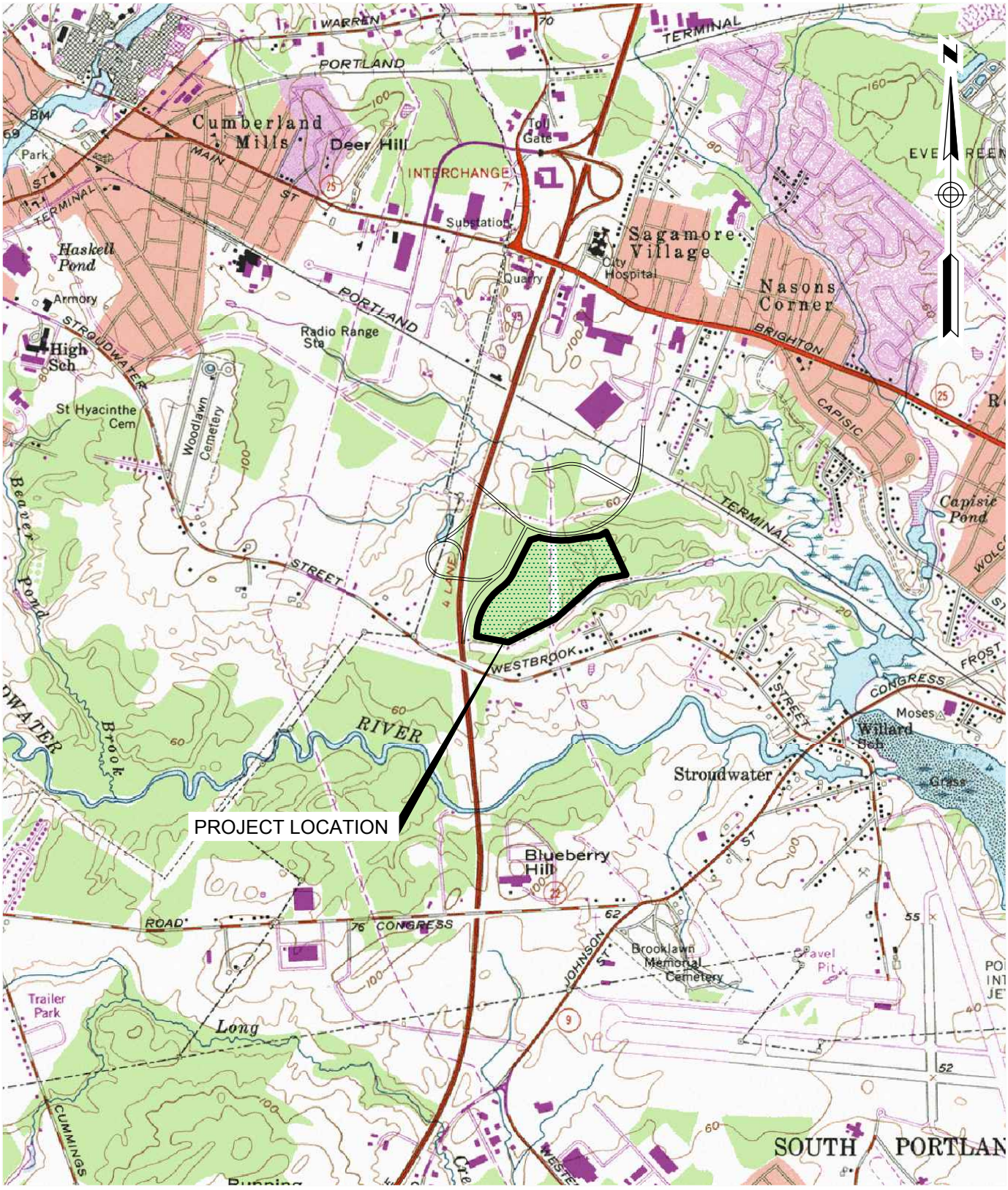
3.5 PROPOSED DEVELOPMENT

The proposed Site Plan, included in the drawings attached to this Section, depicts the proposed conditions for the Site. In addition, a Schematic Design Narrative from Scott Simons Architects describes some of the basis for the proposed project.

The project involves the construction of a two-story office building on LCE 4 with associated parking, utilities, and stormwater management systems. The project also includes the re-alignment of the access road and grading adjustments to the LCEs 5, 6, and 7 within the Portland Technology Park Subdivision. These three lots, along with unchanged LCEs 1, 2, and 3 will remain owned by the City of Portland until development occurs in the future.

3.6 ATTACHMENTS

- Location Plan
- Schematic Design Narrative
- Design Plans (Bound Separately)



2000' 0 2000' 4000'

SOURCE:

U.S.G.S. TOPOGRAPHIC QUARANGLE PORTLAND WEST, MAINE
DATED 1978 AT 1:24,000

BAR SCALE
1" = 2000'
CHECK GRAPHIC SCALE BEFORE USING

WOODARD &CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

LOCATION PLAN

DESIGNED BY: MKC	CHECKED BY: DAS
DRAWN BY: JDE	20384863-SLOD-U1-1.dwg

CITY OF PORTLAND
ECONOMIC DEVELOPMENT CENTER
PORTLAND, MAINE

SITE LOCATION OF DEVELOPMENT
PORTLAND TECHNOLOGY PARK

JOB NO: 222849.63
DATE: MAY 2011
SCALE: AS NOTED

FIG 3-1

SCHEMATIC DESIGN NARRATIVE

Patrons Oxford Philosophy

The philosophy today is the same as it was when the company was formed 125 years ago, to provide protection and service at an affordable cost and still have moderate growth.

Patrons Oxford Insurance Company was established in 1876. Today the company is a personal insurance company offering a wide variety of products to the industry. Located in Auburn, Maine, recent growth has strained their existing facility such that it no longer meets their current or future needs for growth. The desire to attract and retain a younger workforce, to create a more modern, flexible, and sustainable work environment, and to plan for future growth led the company to decide to relocate from Auburn to Portland. The plan was to design a 20,000 SF modern office building in the Portland Technology Park that would support the company's mission and long-term goals. The ability to expand an additional 10,000 SF in the future was also desired.

Patrons Oxford hired Scott Simons Architects in the spring of 2015 to design a facility that would meet their objectives, and that would be ready for occupancy by the fall of 2016. Working closely with the Patrons Oxford management team, SSA has helped select a suitable site for the building, and designed an environmentally sensitive and sustainable two-story office building that will accommodate the needs of the growing company.

The Patrons Oxford Office Building will be the first tenant of the Portland Technology Park, located off the Rand Road exit of the Maine Turnpike in a naturally wooded setting adjacent to several hundred acres of forested lands and trails. The original site selected for the building was Site #1, at the entrance to the Technology Park. After reviewing the findings of the geotechnical survey and the structural engineer's assessment, Site #1 was deemed unsuitable for the new office building due to clay soils that proved to be unable to support the weight of a new building without a complicated and expensive foundation system. The design team then examined the other available sites in the Technology Park, and recommended that Patrons Oxford move their office building to Lot#4, which had more stable sub-surface conditions and would meet the building's site, environmental, parking, and future expansion requirements. Working with the City of Portland, Patrons is now in the process of purchasing Lot #4.

BUILDING DESCRIPTION

The office building is based on the basic geometry and arrangement of the primary work areas upstairs, shifting slightly to respond to the site conditions and the desire to make the shape and form more modern and expressive of Patrons Oxford's long-term goals. The second floor is articulated as a separate form, floating above the ground floor spaces. The rhythm and spacing of the windows and treated wood panels reflect the desire to create an active, visually stimulating façade while also providing generous amounts of natural daylight for the interior work environment. The lower floor has a similar rhythm of windows and wood panels for the larger, common spaces, and in contrast more solid, stone-like panels for the less occupied spaces like the stairs, mechanical rooms, server room, and storage spaces.

On the inside, the building is designed to have a feeling of spaciousness and connectivity. Upon entry, there is a welcoming area with an open view to the second floor and a colorful wall displaying the Patrons Oxford's history and brand. The floor plan layouts reflect an open work environment, with the more collaborative public spaces on the first floor and the offices and work stations on the second floor. The public entrance is located on the south side of the building. The entry area includes a glass enclosed meeting room that can be utilized for sensitive meetings without a member of the public gaining access to the inner, secured part of the building. The employee entrance is in the rear of the building closer to the parking lots. The hallway along the employee entrance has a coat room, access to restrooms, and direct access to the fitness area.

SCHEMATIC DESIGN NARRATIVE

Inside, theacc two floors are connected by an open stairway and clerestory bringing daylight into the center of the building. On one side an open café and collaboration space will create the setting for informal team meetings, and gatherings of the staff around meals. Directly ahead, the space will open into a large meeting/presentation room for upwards of 60 people, where workshops and all staff meetings can be held.

FIRST FLOOR LAYOUT

Along the front of the building is the "Collab Café" and kitchen that will function as a break room and lunchroom, but will also serve as informal meeting spaces throughout the day. One corner of the Collab Café is designed so it can be closed off for a private meeting. Along the north side of the building is a large multi-purpose room, capable of seating over 60 people at tables for presentation and workshops. It is connected through the kitchen to the Collab Café to provide greater flexibility for larger gatherings. The multi-purpose room can be configured for lectures, web-based training, industry meetings, and company events. The first floor also has a meeting room large enough to accommodate board meetings, as well as a small huddle room off the Collab Cafe.
Along the back of the building is a large fitness room, an impressive expression of Patron's commitment to wellness and health. This space will provide a pleasant place to exercise with generous views to the outside landscape. Fitness equipment will occupy over half of the space, with an open area for exercising, stretching, and yoga-type activities occupying the rest. Connected to the fitness area are two full bathrooms, with showers, toilets and sinks, plus an additional two shower rooms. There are also two unisex toilets plus a wellness room with toilet on the ground floor, as well as the IT/server room, and space for storage, mail and recycling.

SECOND FLOOR LAYOUT

The second floor is designed to be an open office environment with individual work stations interspersed with smaller work rooms and meeting rooms for increase flexibility. The open work area is designed to foster greater company collaboration and to create a strong learning environment. Four glass-walled offices flank each end of the building, for a total of eight private offices. There are small rooms called "Solo Rooms" that can be used for a private phone call or to concentrate on a complicated task, and "Huddle Rooms" that can be used for collaborative meetings or conversations for two or more. A small meeting room is provided that can accommodate a larger meeting of 4-6 people. All around the second floor, tall windows provide ample natural daylight and views to the natural setting outside.

MATERIALS

The building is conceived as a wood-framed structure with glue lam beams and columns, cross-laminated timber floors (CLT), and some structural steel reinforcements. The roof will be predominantly flat, but with the southwest and northeast corners tipped up slightly to address the entrance and view from the highway. Exterior materials include stone-like cementicious panels in an rain-screen application for the ground floor walls, treated wood panels and aluminum-framed window panels for the ground and second floor walls, and standing seam metal panels above and below the windows on the second floor. The roof will be a lightly colored membrane roof, to reflect sunlight, and the flashing materials will be zinc-coated copper or a material similar to the standing seam metal panels on the walls.

TECHNOLOGY

The building is conceived of as a high-tech, twenty-first century work environment, and is being designed to support the company's long-term technology needs. Employees will be able to work at their desks or elsewhere in the building, and they will have the ability to work remotely.

SCHEMATIC DESIGN NARRATIVE

GRAPHIC DESIGN/BRANDING

The Patrons Oxford Company is in a process of transformation. The building is the external reflection of an internal process that has been occurring for some time. The new building will provide an opportunity to celebrate Patrons Oxford's excellent reputation within the insurance industry, and the 139 year path from its founding to today, with a timeline and other graphic representation. A Patrons Oxford Story wall is envisioned along a primary wall in the entrance area, to share this story with the staff and everyone that enters the building. There is also space within the new building to create other ways to celebrate the company and to enhance a corporate culture that matches the company mission with graphic design and branding.

When the new office building is completed, it is our hope that Patrons Oxford will have a modern, sustainable office building with appealing amenities to attract and retain the younger, educated, and motivated workforce it needs to continue to grow. This new building will provide the Patrons Oxford community with an opportunity to work together in new ways in a space that supports its mission, its commitment to excellence, customer service, and community engagement.

10. TRAFFIC ANALYSIS

Parking and traffic analyses were completed for the overall Technology Park in 2011. With the proposed development of LCE 4, parking and traffic have been re-evaluated to ensure that the development will remain within the standards that were originally considered. In general, the individual lot demand for parking and traffic has been decreased, as the size of the proposed building is 19,000 square feet instead of 20,000 square feet. This is the first development in the Technology Park, so the traffic will be significantly less than the total amount anticipated for the fully built-out Technology Park.

10.1 TRAFFIC MOVEMENT PERMIT

Gorrill Palmer developed a Traffic Impact Study in 2011 for the overall Technology Park. The City of Portland Planning Board approved a Traffic Movement Permit based on that study in January 2012. Gorrill Palmer has re-evaluated the trip generation calculations for LCE 4 and has determined that the anticipated traffic demand will be equal to or less than the permitted traffic levels. This new evaluation was based on the reduced building footprint and the anticipated number of employees, and is summarized in the attached memo. The proposed development will be in conformance with the issued Traffic Movement Permit.

10.2 PARKING

A total of 70 parking spaces are being provided within LCE 4. Six spaces will be designated for visitor parking including two handicapped spaces with a van-accessible lane. An accessible route will exist between these visitor spaces and the front building entrance. A third van-accessible handicapped space is also being provided behind the building with an accessible route to the back employee entrance.

The plan currently shows space for parking 10 bicycles. We understand that based on City of Portland Code requirements, a total of 14 bicycle parking spaces are required (2 per 100 parking spaces). We will be adjusting our plan to show the total required 14 spaces, and will provide an updated plan.

One of the conditions of the previous Subdivision approval stated the maximum number and size of parking spaces approved at that time could be developed given that a parking analysis be completed with each development project. The original plan for the entire Technology Park included an overall parking ratio of 3.7 spaces per 1,000 square feet of building. The original plan for LCE 4 included a 20,000 square foot building with 78 parking spaces, for a ratio of 3.9. With the proposed 19,000 square foot building, a parking lot with 70 spaces is proposed, for a ratio of 3.7, matching the overall approved Technology Park parking ratio. Gorrill Palmer has evaluated the parking needs for Patrons Oxford, and the attached memo documents that a 70-space parking lot is appropriate for the development.

The parking space size of 18'x8'2" matches the size that was used on the previously approved plans. This reduced size will allow for the required quantity of parking with less impacts to wetlands, as well as less impervious surface. The smaller parking space size fits with the intent of low impact development for the technology park.

10.3 ATTACHMENTS

- Gorrill Palmer Memo

GORRILL PALMER

PO Box 1237, 15 Shaker Road
Gray, Maine 04039
207.657.6910

MEMORANDUM

Date: October 2, 2015
Subject: Parking Demand and Trip Generation Summary
Portland Technology Park – Portland, Maine
To: Ryan Kanteres, Scott Simons Architects
From: Randy Dunton, Gorrill Palmer (JN 3078)

Introduction:

Gorrill Palmer (GP) has evaluated the potential parking demand and trip generation for the proposed office space to be located on Lot 4 of the recently permitted Portland Technology Park development located off the Rand Road in Portland, Maine. The Portland Technology Park is located in the O-P Office Park Zone. The proposed building will have 19,000 square feet of office space and 60-65 employees. The parking evaluation is based on the City of Portland Ordinance for this use and the trip generation is based on the Institute of Transportation Engineers' publication *Trip Generation*, Seventh Edition.

Parking Analysis:

Vehicular Parking:

The parking evaluation considers the City of Portland Ordinance for an office building as well as the previously approved parking ratio, and expected numbers of employees and visitors. The City of Portland Ordinance requires a minimum of one off street parking space for every 400 square feet of floor area. Since the proposed office building has 19,000 square feet of floor area, a minimum of 48 parking spaces are required. However, the proposed use is expected to have 65 employees as well as designating 6 parking spaces for visitors only, and is therefore proposing a total of 70 parking spaces. Providing 70 parking spaces yields a parking ratio of 3.7 per 1,000 sf, which is consistent with the parking ratio that was previously approved for the subdivision.

Bicycle Parking:

Per City Ordinance, non-residential structures are required to provide bicycle accommodations in proportion to vehicular parking. For non-residential structures 2 bicycle parking spaces are required for every 14 vehicle parking spaces. Based on the Ordinance this project would require 14 bicycle parking spaces.

Trip Generation:

Permitted Trip Generation

The Portland Technology Park was issued a Traffic Movement Permit by the City of Portland (who has delegated review authority from MaineDOT) that approved 163 trip ends during the AM peak hour and 153 trip ends during the PM peak hour for the entire development. This approved trip generation was based on the Institute of Transportation Engineers' publication *Trip Generation*, Seventh Edition, Land Use Code (LUC) 760 – Research and Development Center. The original approval included a 20,000 sf building for Lot 4. Since the trip generation was for the entire site and is not broken down by individual buildings, we have calculated just the 20,000 sf building using the same Land Use Code as the original approval. The trip generation calculations assuming 20,000 sf of research and development are attached and summarized as follows:

- AM Peak Hour: 34 trip ends
- PM Peak Hour: 35 trip ends

Proposed Development:

The proposed building on Lot 4 is 19,000 square feet and is proposed to have 60-65 employees. The Institute of Transportation Engineers' publication *Trip Generation*, Seventh Edition, Land Use Code (LUC) 710 – General Office Building and LUC 715 – Single Tenant Office Building were utilized to forecast the trip generation. The following table summarizes the trip generation for both LUC 710 and LUC 715 with calculations attached.

Trip Generation Summary

	Based on 19,000 sf		Based on 65 Employees	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
General Office Building	29	28	31	30
Single Tenant Office Building	34	33	34	33

Both land uses (using floor area and employees) are equal to or less than the equivalent of a 20,000 sf research and development building.

Conclusion:

Lot 4 of the Portland Technology Park development is estimated to require approximately 70 vehicular parking spaces and 14 bicycle parking spaces. The vehicular parking needed would be expected to potentially decrease as the park is built out and the TDM plan is implemented to a greater degree; however that could be several years. The proposed development is forecast to generate the same amount or fewer trip ends during a peak hour than the equivalent permitted trip ends for Lot 4.

11. SIGNIFICANT NATURAL FEATURES

11.1 UNUSUAL NATURAL AREAS

In support of the original permit application for the Technology Park, Woodard & Curran contacted the Maine Department of Conservation in May 2010 regarding the existence of rare or endangered botanical features within the area of the proposed Technology Park. A response was received from the Maine Natural Areas Program in May 2010. The response letter stated that no rare botanical features were documented within the project area. The development of LCE within the Technology Park will not affect any unusual natural areas. A copy of the correspondence was provided as part of the original application dated November 5, 2010, and can be provided again if required.

11.2 WILDLIFE AND FISHERIES

In support of the original permit application, Woodard & Curran contacted the Maine Department of Inland Fisheries and Wildlife (IF&W) in May 2010 for review of any known areas of significant wildlife habitats within the area of the proposed site. A response was received from IF&W in June 2010. The response letter stated that there were no known threatened/endangered fish species or habitat in the vicinity of the proposed project. In addition, there were also no known fisheries resources within the proposed project area.

Since that time, it is our understanding that the Northern Long Eared Bat has been listed as a threatened species in the state of Maine. A request for an official species list was made through the U.S. Fish & Wildlife's online Information for Planning and Conservation program. This list is attached, and confirms that the Northern Long Eared Bat habitat includes our project area; however, there are no critical habitat areas located within our project area.

It is our understanding based on a review of U.S. Fish & Wildlife information that this species of bats typically lives in caves during the winter months, and in trees larger than 3 inches in diameter (DBH) during the summer, with migration between these two habitats in the spring in the fall. The clearing of trees greater than 3 inches will be required for the completion of the project; however, project construction, beginning with tree clearing, is anticipated to begin in the winter of 2016. Tree clearing will not occur at a time when bats are utilizing the trees as habitat. In addition, a tree assessment was completed for the entire Technology Park and submitted as part of the original application. Stands of significant trees have been identified to be maintained, helping to maintain some summer bat habitat in place on the property.

It is not anticipated that this project will have a significant impact on the Northern Long Eared Bat Species. The project will be reviewed by U.S. Fish & Wildlife as part of the Army Corps of Engineers review process.

11.3 SIGNIFICANT TREE ASSESSMENT

A tree assessment of significant tree resources was completed on April 3, 2007 by Woodlot Alternatives, Inc. Trees with potential significance with regards to age, size, form, function, and/or species were identified in support of the original permit application. This included trees that appeared to belong to an older-than-average age class for the forested area, trees with an unusual height, crown size, and/or girth (measured in diameter at breast height or DBH), trees located in or adjacent to wetland resources, and trees in exceptional health for the species. There were approximately 12 individual trees and 12 tree clusters that were identified to be significant. A copy of the Woodlot report was provided as part of the original application dated November 5, 2010.

Care has been taken to preserve significant trees to the extent possible. An updated Tree Preservation Plan with the new LCE 4 layout is attached. Clearing has increased slightly within the setbacks, but is still well below the limits defined in the City's Code of Ordinances.

11.4 WETLANDS

Several areas of forested wetlands border the perimeter of the Site; a wetland delineation and functional assessment was first conducted by Dames and Moore for the site in May 1998. The City followed up with a wetland reconnaissance

in December 2006 by S.W. Cole and hired URS to perform a vernal pool assessment in April and May 2006; copies of these reports were provided as part of the original application.

Boyle Associates completed an evaluation of the wetlands and vernal pools as part of a City-wide Wetland Compensation Opportunities Assessment in July 2009. Boyle Associates then revisited the site in early December 2010 to collect additional information and complete the Vernal Pool Assessment forms to file with Maine Department of Environmental Protection (MDEP) & the Department of Inland Fisheries and Wildlife (IF&W). None of the potential vernal pools identified by URS and Boyle Associates have the criteria necessary to be classified as "significant vernal pools" by the NRPA rules and none of the wetlands in the area of the proposed Site are classified as "wetlands of special significance". Wetland delineation reports that were submitted with the previous permit application for the Technology Park have not been attached to this application, but can be provided as required.

The Portland Technology Park was originally permitted for a total wetland impact of 37,416 square feet. With the proposed changes to LCE 4, and the associated realignment of the access road and adjacent lots, wetland impacts have changed. The total wetland impact is now 37,409 square feet, and the locations of some of the impacts have changed.

Approximately 5,243 square feet of wetland impacts have already occurred at the site with the construction of the roadway. Approximately 1,676 square feet of wetland impacts will occur as a result of the LCE 4 development, including both lot and new road impacts. Following the completion of the LCE 4 work, the total wetland impacts will have reached 6,919 square feet (road and LCE 4).

The wetland impacts anticipated for the LCE property include a small area of wetland impacts in the northwest corner of the lot, near a proposed dumpster enclosure. This area of impact is reduced from the previous design, and eliminates direct impact to a nearby vernal pool. The remainder of the impacts are associated with the outlet for Gravel Wetland 8. Much of the outlet impact overlaps with the location of the future roadway; however the impact is counted as part of the LCE 4 development that will occur before the road is constructed.

The project was originally divided into two phases for wetland impacts. Phase 1 included the entire road and LCEs 1 and 2, with a wetland impact of 14,669 square feet. This phasing was approved by the Maine DEP and the Army Corps of Engineers as part of the Technology Park permitting process with the understanding that following completion of Phase 1, an in lieu fee for wetland compensation would be paid to the State. As part of our permit applications to Maine DEP And the Army Corps, we are requesting to adjust the phasing such that the first phase will include LCE 1, LCE 2, LCE 4, the portion of the road completed to date, and the portion of the road to be constructed with LCE 4. The total wetland impact for Phase 1 will then be 14,588 square feet. Wetland impact figure WI-01 is attached, and shows the wetland impact areas along with proposed (revised) wetland phasing boundaries. Wetland impacts and phasing boundaries will be reviewed as required with the development of each lot.

11.5 **HISTORIC SITES**

A narrative on the historic sites in the vicinity of the Portland Technology Park and potential impacts was provided as part of the original application; no impacts to significant historical and cultural resources within the vicinity to the project area are anticipated to result from the proposed development. Refer to the original application dated November 5, 2010, for additional information.

A similar request for review was submitted in 2014 associated with Maine DEP and Army Corps permit revisions for gas service installation in the Technology Park. Maine Historic Preservation confirmed in December 2014 that the proposed gas line work would have no adverse effect on historic properties. This latest response is attached for your reference.

The project area has not changed since either of the two Maine Historic Preservation Reviews have been completed, and no impacts to significant historical and cultural resources within the vicinity to the project area are anticipated to result from the proposed development.

11.6 **ATTACHMENTS**

- Official Species List
- Tree Plan
- Wetland Impact Figure
- 2015 Maine Historic Preservation Commission Response

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
17 GODFREY DRIVE, SUITE 2
ORONO, ME 04473
PHONE: (207)866-3344 FAX: (207)866-3351
URL: www.fws.gov/mainefieldoffice/index.html

Consultation Code: 05E1ME00-2015-SLI-0413 September 25, 2015
Event Code: 05E1ME00-2015-E-00573
Project Name: Portland Technology Park

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies the threatened, endangered, candidate, and proposed species and designated or proposed critical habitat that may occur within the boundary of your proposed project or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be
completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC Web site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the Endangered Species Consultation Handbook at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

This species list also identifies candidate species under review for listing and those species that the Service considers species of concern. Candidate species have no protection under the Act but are included for consideration because they could be listed prior to completion of your project. Species of concern are those taxa whose conservation status is of concern to the Service (i.e., species previously known as Category 2 candidates), but for which further information is needed.

If a proposed project may affect only candidate species or species of concern, you are not required to prepare a Biological Assessment or biological evaluation or to consult with the Service. However, the Service recommends minimizing effects to these species to prevent future conflicts. Therefore, if early evaluation indicates that a project will affect a candidate species or species of concern, you may wish to request technical assistance from this office to identify appropriate minimization measures.

Please be aware that bald and golden eagles are not protected under the Endangered Species Act but are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may require development of an eagle conservation plan: http://www.fws.gov/windenergy/eagle_guidance.html Information on the location of bald eagle nests in Maine can be found on the Maine Field Office Web site:
http://www.fws.gov/mainefieldoffice/Project%20review4.html

Additionally, wind energy projects should follow the wind energy guidelines:
http://www.fws.gov/windenergy/ for minimizing impacts to migratory birds and bats. Projects may require development of an avian and bat protection plan.

Migratory birds are also a Service trust resource. Under the Migratory Bird Treaty Act, construction activities in grassland, wetland, stream, woodland, and other habitats that would result in the take of migratory birds, eggs, young, or active nests should be avoided. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm and at:

http://www.towerkill.com; and at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Portland Technology Park

Official Species List

Provided by:

Maine Ecological Services Field Office
17 GODFREY DRIVE, SUITE 2
ORONO, ME 04473
(207) 866-3344
http://www.fws.gov/mainefieldoffice/index.html

Consultation Code: 05E1ME00-2015-SLI-0413
Event Code: 05E1ME00-2015-E-00573

Project Type: DEVELOPMENT

Project Name: Portland Technology Park
Project Description: Development of a lot within a previously permitted technology park in Portland, Maine in 2016.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-70.33015966415405 43.6665988334234, -70.32492399215698 43.666490180504134, -70.32484889030457 43.66240779260367, -70.3309965133667 43.66184120352345, -70.33015966415405 43.6665988334234)))

Project Counties: Cumberland, ME

Endangered Species Act Species List

There are a total of 1 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Mammals	Status	Has Critical Habitat	Condition(s)
Northern long-eared Bat *(Myotis septentrionalis)*	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Calculation for Tree Preservation within Setback

City Code of Ordinances

Sec. 14-526. Site plan standards (b) Environmental Quality Standards. 2. Landscaping and Landscape Preservation a. Landscape Preservation (ii) All development subject to zoning setbacks shall preserve a minimum of 30% of existing trees ten (10) inches DBH or greater within the required setback area.

		Length Along PL (ft)	Setback Depth (ft)	Area (ft²)
Preservation Within Setback	P1	283	50	14,150
	P2	130	50	6,500
	P3	120	50	6,000
	P4	122	50	6,100
	P5	191	25	4,775
	P6	295	25	7,375
	P7	244	25	6,100
	P8	777	25	19,425
			Total Area Preserved	70,425
			% Trees Preserved within Setbacks*	**64%**
			Minimum % Required	*30%*
		Length Along PL (ft)	Setback Depth (ft)	
Clearing Within Setback	C1	315	50	15,750
	C2	49	50	2,450
	C3	221	25	5,525
	C4	427	25	10,675
	C5	182	25	4,550
			Total Area Cleared	38,950
			% Trees Cleared within Setbacks*	**36%**
			Maximum % Allowed	*70%*

P1, 2, 3... = Length of tree preservation within setback; refer to dimensions noted on Plan
C1, 2, 3... = Length of tree clearing within setback; refer to dimensions noted on Plan

*Note: Actual number of trees with DBH 10" or greater was not documented due to the property size and extensive tree growth. Size and distribution of tree growth is relatively even across site, as confirmed by Jeff Tarling, City Arborist. Calculation assumes that an even distribution of trees of 10" and greater exists in all forested areas within the property setbacks.



LEGEND:

- PAVEMENT
- CLEARED LANDSCAPED AREA
- BUILDING
- "SIGNIFICANT" TREE OR CLUSTER IDENTIFIED BY WOODLOT
- REMOVAL OF "SIGNIFICANT" TREE OR CLUSTER
- PROTECTION OF "SIGNIFICANT" TREE OR CLUSTER DURING CONSTRUCTION
- PROPOSED TREES

NOTES:

WOODLOT ALTERNATIVES, INC. PERFORMED AN ASSESSMENT OF SIGNIFICANT TREE RESOURCES ON THE PROJECT PARCEL ON APRIL 3, 2007. TREES WITH POTENTIAL SIGNIFICANCE WITH REGARDS TO AGE, SIZE, FORM, FUNCTION, AND/OR SPECIES WERE IDENTIFIED AND ARE INDICATED ON THE PLAN. SOME OF THE TREES OR TREE CLUSTERS IDENTIFIED IN THE WOODLOT STUDY WILL BE REMOVED AS PART OF THE PROJECT. THE EXACT NUMBER IS UNKNOWN, AS THE STUDY DID NOT IDENTIFY THE EXACT NUMBER OF TREES INCLUDED IN EACH CLUSTER; HOWEVER, WE ESTIMATE THAT THE FULL BUILD-OUT OF THE PROJECT WILL RESULT IN THE REMOVAL OF APPROXIMATELY 7 SIGNIFICANT TREE CLUSTERS OR INDIVIDUAL TREES IDENTIFIED IN THE STUDY. THE PROJECT PROPOSES A TOTAL OF 44 NEW TREES ALONG THE PARK ROADWAY, CLUSTERED OR LOCATED IN A MANNER THAT BLENDS WITH THE ADJACENT, PRESERVED FORESTED AREAS OF THE SITE. SIGNIFICANT TREES OR TREE CLUSTERS THAT RESIDE ADJACENT TO BUT NOT WITHIN THE PROPOSED WORK AREAS ARE IDENTIFIED FOR PRESERVATION ON THE SITE PLANS, WITH SPECIFIC CALL-OUTS AND DETAILS FOR TREE PROTECTION.

EASEMENT AREAS 1, 2 & 3 AND THE LIMITED COMMON ELEMENT LINES NOTED ON THE SUBDIVISION RECORDING PLAT DICTATE THE PERMITTED CLEARING LIMITS OF THE SITE. A FOREST MANAGEMENT PLAN IS BEING PREPARED FOR THE PROJECT SITE, AND WILL DICTATE THE FOREST MANAGEMENT PRACTICES IN THE COMMON ELEMENT AREAS OF THE SITE. THE CLEARING LIMITS WILL BE FIELD DELINEATED WITH SURVEY MARKERS OR SIGNS APPROVED BY THE CITY PRIOR TO CONSTRUCTION. LIMITED CLEARING MAY OCCUR WITHIN THE LIMITED COMMON ELEMENT AREAS PRIOR TO DEVELOPMENT OF THE BUILDING SITES. THIS WORK WILL BE PERFORMED AT THE DIRECTION OF A PROFESSIONAL FORESTER UNDER CONTRACT WITH THE CITY, WITH OVERSIGHT BY THE CITY'S ARBORIST.

100' 0 100' 200'
BAR SCALE 1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

WOODARD & CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

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DAVID A. SENUS 10791 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER
10/2/2015

REV	DESCRIPTION	DATE
DESIGNED BY: MKC/JLS	CHECKED BY: DAS	
DRAWN BY: JBC	229001-TP-01.dwg	

TREE PRESERVATION PLAN

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: OF

TP-01

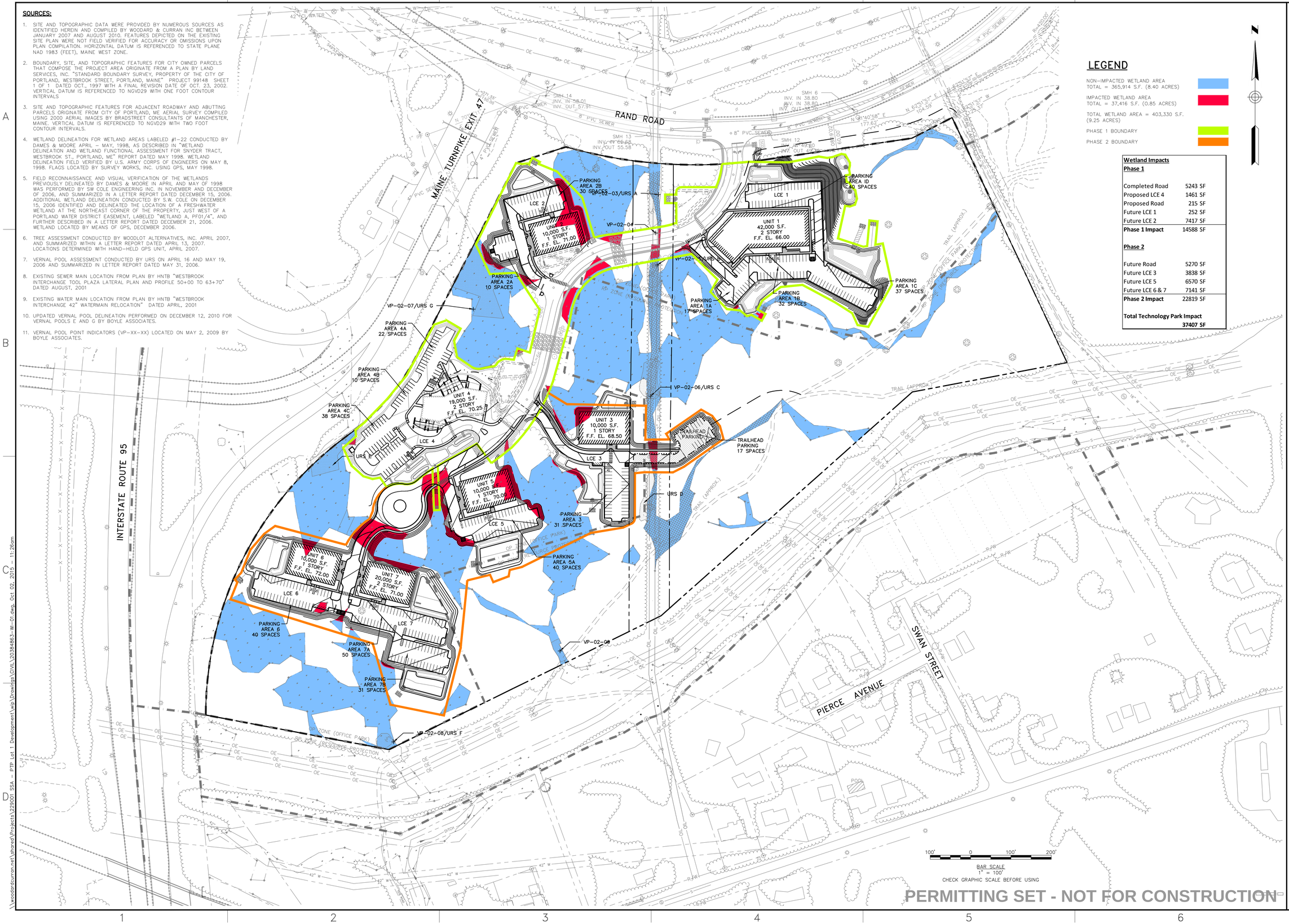
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24x36 SHEET
1:1

24x36 SHEET
1:1

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
2. BOUNDARY, SITE, AND TOPOGRAPHIC FEATURES FOR CITY OWNED PARCELS THAT COMPOSE THE PROJECT AREA ORIGINATE FROM A PLAN BY LAND SERVICES, INC. "STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" PROJECT 99148 SHEET 1 OF 1 DATED OCT., 1997 WITH A FINAL REVISION DATE OF OCT. 23, 2002. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH ONE FOOT CONTOUR INTERVALS
3. SITE AND TOPOGRAPHIC FEATURES FOR ADJACENT ROADWAY AND ABUTTING PARCELS ORIGINATE FROM CITY OF PORTLAND, ME AERIAL SURVEY COMPILED USING 2000 AERIAL IMAGES BY BRADSTREET CONSULTANTS OF MANCHESTER, MAINE. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH TWO FOOT CONTOUR INTERVALS.
4. WETLAND DELINEATION FOR WETLAND AREAS LABELED #1–22 CONDUCTED BY DAMES & MOORE APRIL – MAY, 1998, AS DESCRIBED IN "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" REPORT DATED MAY 1998. WETLAND DELINEATION FIELD VERIFIED BY U.S. ARMY CORPS OF ENGINEERS ON MAY 8, 1998. FLAGS LOCATED BY SURVEY WORKS, INC. USING GPS, MAY 1998.
5. FIELD RECONNAISSANCE AND VISUAL VERIFICATION OF THE WETLANDS PREVIOUSLY DELINEATED BY DAMES & MOORE IN APRIL AND MAY OF 1998 WAS PERFORMED BY SW COLE ENGINEERING INC. IN NOVEMBER AND DECEMBER OF 2006, AND SUMMARIZED IN A LETTER REPORT DATED DECEMBER 15, 2006. ADDITIONAL WETLAND DELINEATION CONDUCTED BY S.W. COLE ON DECEMBER 15, 2006 IDENTIFIED AND DELINEATED THE LOCATION OF A FRESHWATER WETLAND AT THE NORTHEAST CORNER OF THE PROPERTY, JUST WEST OF A PORTLAND WATER DISTRICT EASEMENT, LABELED "WETLAND A, PF01/4", AND FURTHER DESCRIBED IN A LETTER REPORT DATED DECEMBER 21, 2006. WETLAND LOCATED BY MEANS OF GPS, DECEMBER 2006.
6. TREE ASSESSMENT CONDUCTED BY WOODLOT ALTERNATIVES, INC. APRIL 2007, AND SUMMARIZED WITHIN A LETTER REPORT DATED APRIL 13, 2007. LOCATIONS DETERMINED WITH HAND–HELD GPS UNIT, APRIL 2007.
7. VERNAL POOL ASSESSMENT CONDUCTED BY URS ON APRIL 16 AND MAY 19, 2006 AND SUMMARIZED IN LETTER REPORT DATED MAY 31, 2006.
8. EXISTING SEWER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE TOOL PLAZA LATERAL PLAN AND PROFILE 50+00 TO 63+70" DATED AUGUST, 2001
9. EXISTING WATER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE 42" WATERMAIN RELOCATION" DATED APRIL, 2001
10. UPDATED VERNAL POOL DELINEATION PERFORMED ON DECEMBER 12, 2010 FOR VERNAL POOLS E AND G BY BOYLE ASSOCIATES.
11. VERNAL POOL POINT INDICATORS (VP–XX–XX) LOCATED ON MAY 2, 2009 BY BOYLE ASSOCIATES.



LEGEND

- NON–IMPACTED WETLAND AREA TOTAL = 365,914 S.F. (8.40 ACRES)
- IMPACTED WETLAND AREA TOTAL = 37,416 S.F. (0.85 ACRES)
- TOTAL WETLAND AREA = 403,330 S.F. (9.25 ACRES)
- PHASE 1 BOUNDARY
- PHASE 2 BOUNDARY

Wetland Impacts	
Phase 1	
Completed Road	5243 SF
Proposed LCE 4	1461 SF
Proposed Road	215 SF
Future LCE 1	252 SF
Future LCE 2	7417 SF
Phase 1 Impact	14588 SF
Phase 2	
Future Road	5270 SF
Future LCE 3	3838 SF
Future LCE 5	6570 SF
Future LCE 6 & 7	7141 SF
Phase 2 Impact	22819 SF
Total Technology Park Impact	**37407 SF**

PERMITTING SET - NOT FOR CONSTRUCTION

41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

WOODARD & CURRAN

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STATE OF MAINE
DAVID A. SENUS
PROFESSIONAL ENGINEER

10/2/2015

REV	DESCRIPTION	DATE

DESIGNED BY: MKC/JJS
DRAWN BY: JBC
CHECKED BY: DAS
J:\229001_WI-01.dwg

WETLAND IMPACT FIGURE

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: 1 OF 1

WI-01

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

PAUL R. LEPAGE
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

December 19, 2014

Ms. Maggie Connolly
Woodard & Curran
41 Hutchins Drive
Portland, ME 04102

Project: MHPC # 1867-14 - Portland Technology Park; gas service
Town: Portland, ME

Dear Ms. Connolly:

In response to your recent request, I have reviewed the information received December 11, 2014 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the information submitted, I have concluded that this undertaking will have **no adverse effect** upon historic properties.

However, our finding is *conditional* upon the following requirements:

1. The original configuration of the C&O Canal bed and banks will be maintained by landscape restoration after the pipeline installation. Please confirm in writing that our recommendation will be incorporated into the plans for this project and send our office plans which clearly indicate that this work will be conducted.

Please contact Robin Reed of our staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney
Deputy State Historic Preservation Officer

PHONE: (207) 287-2132

FAX: (207) 287-2335

12. STORMWATER MANAGEMENT PLAN & CALCULATIONS

12.1 PROJECT BACKGROUND

A detailed stormwater management design was submitted as part of the original application for the Portland Technology Park. The site was anticipated to include a total of seven buildings, collectively totaling 122,000 square feet of gross floor space. Each building would have associated paved parking areas, and a paved access road and utility corridor would extend through the site. A system of gravel wetlands and underdrained soil filters were designed to provide stormwater treatment and flooding control to manage stormwater for the entire site.

A portion of the roadway and three gravel wetlands have been constructed. This permit application is addressing the development of one lot within the Technology Park, LCE 4. This lot will take advantage of stormwater treatment from one of the already completed gravel wetlands (Gravel Wetland 4) and one additional gravel wetland to be constructed (Gravel Wetland 8). In addition, with required site grading changes, a gravel wetland has been eliminated from the original design (Gravel Wetland 9).

The proposed LCE 4 layout differs from the layout as defined in the original application drawings. The building shape has changed and the footprint has been reduced from 10,000 SF (20,000 SF in two stories) to 9,500 SF (19,000 SF in two stories) Parking layouts have been modified, and 8 fewer spaces are being proposed.

Existing drainage patterns and features are shown on Figure 12-1, Pre-Development Drainage Area Map. The figure from the original application has been utilized for this new application, as the same undeveloped pre-development condition is being considered. The Technology Park site is relatively flat, with the exception being an area of significant relief in the northeast corner and along the southern edge (forested drainage channels), and contains approximately ten acres of forested wetlands. The plan delineates the site into seven distinct drainage areas, two of which (Subcatchments 1 and 2) discharge to adjacent land to the east of the site noted to be owned by Energy East Foundation, conservation land that falls within the Resource Protection Zone. Drainage from this land flows into the tidal Fore River Estuary System. The remaining five subcatchments (Subcatchments 3 through 7) discharge through forested drainage channels to a CMP power distribution Right-of-Way (ROW) south of the site, where they flow into the former Oxford-Cumberland Canal, which is now a forested stream channel along the southern edge of the CMP ROW. This stream channel/canal ultimately discharges into the tidal Fore River Estuary System.

The proposed drainage structures and features are shown on Figure 12-2, Post-Development Drainage Area Map. This figure has been updated to show the changes proposed for LCE 4. This plan identifies proposed grades, proposed surface features, and stormwater management systems, including gravel wetlands and underdrained soil filter systems, to treat and detain stormwater runoff. The total proposed impervious area for the site at full build-out is 9.31 acres. Total disturbed and developed area for the site at full build-out is 13.7 acres.

Adequate provisions have been made to collect, treat and detain the required amount of stormwater runoff generated from the developed area of the site. Eleven proposed gravel wetlands and five proposed underdrained soil filters, dispersed throughout the site, have been designed with outlet structures to store and treat stormwater volumes generated onsite from the 2-year, 10-year and 25-year, 24-hour storm events. The proposed stormwater management strategy for the site manages and discharges stormwater close to the source in an attempt to maintain the pre-development hydrology of the site. Further, rock sandwiches are proposed beneath portions of the road to reduce channelized flow where drainage crosses the roadway, and to better mimic the natural pre-development site hydrology.

The HydroCAD model has been updated to reflect the changes for LCE 4. The drainage areas for Gravel Wetlands 4 and 8 have changes, and Gravel Wetland 8 has been completely redesigned. Gravel Wetland 9 was eliminated and drainage will be re-directed to Gravel Wetland 7. In addition, the new Chapter 500 Stormwater regulations, adopted in August 2015, define new standard rainfall amounts for the 2-year, 10-year and 25-year, 24-hour storm events. Both the pre and post HydroCAD stormwater models have been updated to reflect these new rainfall amounts, and the resulting changes in flow are reported in the following section.

12.2 APPLICABLE REGULATIONS

Applicable regulations that govern stormwater management on this site include the State of Maine Department of Environmental Protection (MaineDEP) Chapter 500 Stormwater Management Law, MaineDEP Site Law Standards, Section 5 of the City of Portland Technical Standards, Chapter 32 of the City of Portland Code of Ordinances, and the Maine Stormwater Best Management Practices (BMP) Manual. The project will disturb more than one acre of area and will result in more than one acre of new impervious area. In addition, the project is being reviewed under MaineDEP Site Law regulations, which require conformance with Chapter 500 Basic Standards, General Standards, and Flooding Standards. The project will be required to meet the standards for the management of stormwater discharging to freshwater or coastal wetlands. The Fore River Estuary System is not listed as an urban impaired stream in Chapter 502 of the MaineDEP Stormwater Regulations; therefore, the project is not required to meet the urban impaired stream standard.

12.3 BASIC STANDARDS (SOIL EROSION AND SEDIMENTATION CONTROL)

According to the MaineDEP Chapter 500 Stormwater Regulations, "a project disturbing one acre or more must meet the basic standards". In addition, the project is subject to Site Law, which requires conformance with the Basic Standards. These standards address erosion and sedimentation control, inspection and maintenance, and good housekeeping practices. The application includes erosion and sediment control plans, details and notes. These notes cover good housekeeping practices. The Erosion and Sediment Control Plan for the proposed project is provided within Section 12.7 of this Report.

12.4 GENERAL STANDARDS (WATER QUALITY)

In addition to meeting the basic standards, the project must also meet the general standards. The MaineDEP Chapter 500 Stormwater Regulations require that at least 80% of the site be treated through the use of wetponds, filtration, infiltration, or buffers. Further, the 80% of the site that is treated must include at least 95% of the site's impervious area. MaineDEP regulations allow for a linear portion of a site to meet a reduced rate of treatment. Linear portions are required to treat at least 50% of the developed area and 75% of the impervious area. These requirements have been met through the use of eleven gravel wetlands and five underdrained soil filters located on the site. This stormwater management approach was approved as part of the original permit issued in 2012. Gravel wetlands are proven to provide excellent water quality treatment in similar applications, as researched and reported by the University of New Hampshire's Stormwater Center. The project site conditions lend well to the use of gravel wetland systems, considering the forested wetland hydrology, low permeability soils and high groundwater table. Table 12-1 below outlines the treated areas and calculated percentages demonstrating conformance with the MaineDEP Chapter 500 standards. Figure 12-4 gives a visual representation of treatment areas for the entire site.

Table 12-1: Portland Technology Park Water Quality Treatment Percentages

Water Quality Treatment Percentages					
		Total Area (Acres)	**Area Treated (Acres)**	**Percent Treated**	**Percent Required**
Non-Linear Portion	Impervious Area	7.95	7.72	97%	95%
	Developed Area	11.3	9.13	81%	80%
Linear Portion	Impervious Area	1.37	1.24	91%	75%
	Developed Area	2.37	1.65	69%	50%

The new LCE 4 layout has resulted in some minor modifications to the impervious, developed, and treated areas within the Technology Park. The total impervious area has been increased from 9.1 acres of impervious areas as originally permitted to 9.31 acres. This impervious area includes the surface areas of the gravel wetlands. Gravel Wetland 8 increased in size, Gravel Wetland 9 was eliminated, and the impervious surface on the site (pavement, roof, etc.) was

increased, resulting in a net increase in impervious surface. Developed area within the Technology Park has increased from 13.0 acres to 13.7 acres due to the expansion of the LCE 4 site. Required levels of treatment will continue to be exceeded for all impervious and developed areas. It is noted, that as the layout changed for LCE 4, the same will occur for each of the subsequent developed lots. Impervious areas, developed areas, and treatment levels will be reviewed at each stage of development to ensure compliance with the standards.

12.4.1 Gravel Wetland 4

A portion of the LCE 4 site will be directed to the previously constructed Gravel Wetland 4. The building's roof will drain to this wetland, as will the northern building terraces, landscaping areas, and parking areas. A shallow swale has been graded between the building and the wetland, and the area will be landscaped and will serve as a vegetated swale to direct stormwater from the parking lot and terraces back to Gravel Wetland 4. This vegetated swale area will provide some pre-treatment for the stormwater prior to it entering the gravel wetland, and this area has been incorporated into the available storage volume at the Gravel Wetland.

The sizing of this gravel wetland to meet minimum surface area, volume, and sediment forebay requirements with the new site layout has been confirmed, and is summarized in Tables 12-2, 3, and 4 below. The gravel wetland continues to meet length to width ratio requirements as summarized in Table 12-5.

The top of berm elevation within Gravel Wetland 4 is 68.8 feet. Based on the updated HydroCAD model, the peak stormwater elevation due to a 25-year storm event will be 68.01. Approximately 9.48 inches of freeboard is provided at the road. The elevation of the parking lot at the northern end of the vegetated swale is 68.2, providing only 2.28 inches of freeboard; however, drainage back into the parking lot in a significant storm event will not be an issue. The finish floor elevation of the building is 70.25, approximately 2.24 feet higher than the peak elevation in the 25-year storm event. Site flooding during a 25-year storm event due to overflow of Gravel Wetland 4 will not be a concern.

12.4.2 Gravel Wetland 8

This gravel wetland has been designed to meet minimum surface area, volume, and sediment forebay requirements, as summarized in Tables 12-2, 3, and 4 below. The gravel wetland also meets length to width ratio requirements as summarized in Table 12-5.

The top of berm elevation has been designed at 66.6 feet. The 25-year storm peak stormwater elevation is 65.83 feet, as calculated by the HydroCAD model. Approximately 9.24 inches of freeboard will be provided.

12.4.3 Gravel Wetland 7

With the elimination of Gravel Wetland 9, Gravel Wetland 7 will now receive greater flows. The surface area, volume, sediment forebay, and length to width ratio calculations have all be reconfirmed and are summarized in the tables below. The top of berm elevation remains at 68.4 feet, with a new 25-year storm peak stormwater elevation of 67.9 inches. The gravel wetland design provides for 6 inches of freeboard.

12.4.4 Gravel Wetland Summary

All gravel wetlands have been designed based on the most recent University of New Hampshire specifications. Freeboard during the 25-year storm event will provide for adequate protection for each of the three modified gravel wetlands. The following tables summarize the sizing for the three modified gravel wetlands described above.

Table 12-2: Gravel Wetland Surface Area Calculations

Gravel Wetland	Total Drainage Area (acre)	% Impervious	Impervious Area (acre)	Pervious Area (acre)	Surface Area Required** (acre)	Surface Area Required (SF)	Surface Area Provided (SF)
4	1.30	0.64	0.84	0.46	0.05	2225	4633
7	0.60	0.65	0.39	0.21	0.02	1029	4339
8	1.40	0.76	1.07	0.33	0.06	2619	3229

***Required Surface Area includes 5% Impervious area plus 2% Pervious area.*

Table 12-3: Gravel Wetland Volume Calculations

Gravel Wetland	Total Drainage Area (acre)	% Impervious	Impervious Area (acre)	Pervious Area (acre)	Volume Required** (acre-feet)	Volume Required (CF)	Actual Volume (CF)
4	1.30	0.64	0.84	0.46	0.09	3708	11053
7	0.60	0.65	0.39	0.21	0.04	1715	7129
8	1.40	0.76	1.07	0.33	0.10	4365	4916

***Required Volume includes 1" over Impervious area plus 0.4" over Pervious area.*

Table 12-4: Gravel Wetland Forebay Calculations

Gravel Wetland	Forebay Required** (CF)	Actual Forebay (CF)
4	371	723
7	171	691
8	437	525

***Required Forebay is 10% of Total Volume Required.*

Table 12-5: Gravel Wetland Length-to-Width Ratio

Gravel Wetland	Cell #	Length (ft) (min 15)	Width (ft)	Ratio (min 0.5)
4	1	40	45	0.89
4	2	60	30	2.00
7	1	90	20	4.50
7	2	90	20	4.50
8	1	55	15	3.67
8	2	50	30	1.67
8	3	65	15	4.33

12.5 FLOODING STANDARD

In addition to meeting the basic and general standards, the project is required to meet the flooding standard. The MaineDEP Chapter 500 Stormwater Regulations indicate that the stormwater management system must detain, retain, or result in the infiltration of the stormwater flows from the 24-hour storm of the 2-, 10- and 25-year frequencies such that peak flows from the post-development design of the site do not exceed those from the pre-development design.

Stormwater modeling was performed using HydroCAD Stormwater Modeling System software by Applied Microcomputer Systems. HydroCAD uses TR-20 runoff calculation methodology. The HydroCAD output from both the pre- and post-development models is attached for your reference.

The runoff curve numbers (CN) for the subcatchments (drainage areas) have been computed using the TR-55 methodology. The subcatchments were divided based on land use, and these acreage measurements were used to compute a weighted (composite) CN.

The time of concentration (Tc) paths for the subcatchments were selected to represent the most hydrologically remote point of the watershed. The Tc paths are shown on the attached Pre-Development and Post-Development Stormwater Plans, Figures 12-1 and 12-2 respectively. Note that the Tc computations contain time calculations using TR-55 sheet flow, shallow concentrated flow, and channel (pipe) flow equations.

Subcatchment areas and flowpath determinations were based on the survey and proposed contours. The property boundary was used as the most downstream point of the stormwater analysis in both the pre and post development calculations.

Post-Development subcatchment areas and Tc paths for a portion of the site have changed due to changes to LCE 4. In addition, the rainfall data used for modeling has been updated by the MaineDEP. The HydroCAD model has been updated to reflect these changes. All other conditions, including soil types and curve numbers, have remained the same as originally modeled and approved.

12.5.1 Pre-Development Conditions

Although a portion of the roadway has been constructed, the Pre-Developed condition considering no development, as previously submitted, will continue to be used. The rainfall events have been updated, and the HydroCAD model re-run, and the output of the model is attached. Results of the model are summarized later in this report.

12.5.2 Post-Development Conditions

The Post-Development condition remains primarily as previously defined, with some minor modifications to subcatchments to account for the proposed LCE 4 development which differs from the original submission.

The proposed overall Technology Park development includes construction of a new road and building sites with associated stormwater infrastructure and utilities. At full build out, the site will contain seven office buildings. The total impervious area for the site is 9.31 acres. Total developed area for the site is 13.7 acres. The post-development drainage system will operate as thirty-six distinct drainage areas (subcatchments). Table 6 describes how the post development subcatchments relate to the pre development subcatchment study points (SPs) and drainage areas. Table 12-7 describes the individual subcatchments for the post development model. Subcatchments that have changed in area since the previous submission are highlighted in gray. Figure 12-3 shows the locations of the post-development subcatchment areas.

Table 12-6: Post Development Subcatchment Routing

Study Point/Drainage Area	Subcatchments
1	0S, 1S, 2S, 3S, 4Sa, 4Sb, 4Sc, 5S, 6S, 8S
2	7S, 9S, 11S
3	17S
4	18S
5	10S, 12S, 13S, 14S, 15S, 16S, 19S, 20S, 21S, 23S, 29S
6	22S, 24S, 25S, 26S, 27S, 28S, 30S, 32S, 34S
7	31S, 33S, 35S, 36S

Table 12-7: Post Development Subcatchment Descriptions

Subcatchment	Discharge Point	Includes
0	Swale to SP1	Access road, grassed area
1	Swale to SP1	Access road, grassed area, undisturbed area
2	Culvert under main entrance to SP1	Undisturbed area
3	Soil Filter 3 to SP1	Parking lot
4a	SP1	Undisturbed area, grassed area
4b	Soil Filter 1 to SP1	Undisturbed area, grassed area
4c	Soil Filter 2 to SP1	Undisturbed area, grassed area
5	Soil Filter 4 to SP1	Building 1
6	Soil Filter 4 to SP1	Parking lot, grassed area
7	Soil Filter 5 to SP2	Parking lot, sidewalk
8	Soil Filter 4 to SP1	Parking lot
9	Soil Filter 5 to SP2	Parking lot, driveway, sidewalk, grassed area
10	Gravel Wetland 1 to SP5	Access road, sidewalk
11	SP2	Undisturbed area, grassed area
12	Gravel Wetland 2 to SP5	Parking lot, sidewalk
13	Gravel Wetland 3 to SP5	Building 2
14	Gravel Wetland 3 to SP5	Access Road, parking lot, sidewalk, grassed area
15	SP5	Undisturbed area, grassed area
16	SP5	Undisturbed area, grassed area
17	SP3	Undisturbed area
18	SP4	Undisturbed area, pervious paver area

Subcatchment	Discharge Point	Includes
19	SP5	Undisturbed area, sidewalk, grassed area, pervious paver area
20	Gravel Wetland 4 to SP5	Building 4
21	Gravel Wetland 5 to SP5	Building 3
22	Gravel Wetland 8 to SP6	Parking lot, sidewalk, access road
23	Gravel Wetland 4 to SP5	Access road, parking lot, grassed area, sidewalk
24	SP6	Undisturbed area, grassed area
25	Gravel Wetland 8 to SP6	Access road, sidewalk
26	Gravel Wetland 7 to SP6	Building 5
27	Gravel Wetland 7 to SP6	Parking lot, sidewalk, grassed area
28	Gravel Wetland 6 to SP6	Parking lot, driveway, grassed area
29	SP5	Undisturbed area, grassed area, pervious paver area
30	SP6	Undisturbed area, grassed area
31	Gravel Wetland 12 to SP7	Building 6
32	Gravel Wetland 10 to SP6	Building 7
33	Gravel Wetland 12 to SP7	Parking lot, sidewalk, grassed area
34	Gravel Wetland 10 to SP6	Driveway, parking lot, grassed area, sidewalk
35	Gravel Wetland 11 to SP7	Parking lot, grassed area
36	SP7	Undisturbed area, grassed area

Note: Subcatchments that have changed from the previous submission are highlighted above in gray

Adequate provisions have been made to collect and discharge all stormwater generated from the developed area of the site. Eleven gravel wetlands and five underdrained soil filters have been designed to store and treat stormwater volumes generated onsite from the 2-year, 10-year, and 25-year, 24-hour storm event. These rainfall amounts have increased from the previous submittal to reflect the newly approved Chapter 500 stormwater management rules.

The detention time of the water quality volume for each of the gravel wetlands and underdrained soil filters was evaluated for compliance with the MaineDEP required 24-48 hour detention time, as shown in Table 12-8 below. Where necessary, an orifice was added to the outlet to slow down flow to achieve the required detention time. The table lists the detention times calculated based on the HydroCAD outputs for the 1-inch 24-hour storm event.

Table 12-8: Treatment Detention Times

Treatment System	Start Detention Hour	Stop Detention Hour	Detention Time (Hours)
Gravel Wetland #1	6	32	26
Gravel Wetland #2	8	38	30
Gravel Wetland #3	6	42	36
Gravel Wetland #4	6	56	50*
Gravel Wetland #5	6	32	26
Gravel Wetland #6	6	34	28
Gravel Wetland #7	6	40	34
Gravel Wetland #8	8	34	26
Gravel Wetland #9	Eliminated		
Gravel Wetland #10	6	40	34
Gravel Wetland #11	8	36	28
Gravel Wetland #12	6	32	26
Underdrained Soil Filter #1	12	24	12*
Underdrained Soil Filter #2	12	20	8*
Underdrained Soil Filter #3	10	40	30
Underdrained Soil Filter #4	6	34	28
Underdrained Soil Filter #5	8	38	30

Stormwater systems listed above with an asterisk next to their detention time value do not meet the required 24-48 hour timing requirement. Underdrained Soil Filter's 1 and 2 as modeled did not meet the required time limit when previously approved, and continue to have shorter detention times. Both filters have been designed to just exceed the minimum surface area required and as such even with a very small orifice; the filters do not detain the water quality volumes for at least 24 hours. This is due to the very small contributing area, which is all pervious. A waiver from this requirement for these specific soil filters was requested as part of the original application. We request that this waiver be maintained.

Gravel Wetland 4 exceeds the maximum 48 hour detention time by two hours. This gravel wetland is already constructed. It will be receiving a larger drainage area, and will have greater flow, requiring longer detention time. The gravel wetland is larger and has been designed to assist with flood control. The original design for Gravel Wetland 4 had a detention time of 46 hours, and has increased to 50 hours. We request a waiver from this requirement for this Gravel Wetland.

Gravel Wetland 9 has been eliminated. Drainage that would have been directed to Gravel Wetland 9 will be directed to Gravel Wetland 7.

The stormwater outlet control structures are sized to attenuate the flow and therefore provide flood control so that the rate of runoff after construction of the proposed project is no greater than the pre-development rate of runoff in the design storm conditions.

HydroCAD was used to model stormwater flows from the site based on the modeling assumptions described above. Table 12-9 below provides a summary of the peak flow rates for the 24-hour, 2-, 10- and 25-year Type-III storm events. As shown below, there is a net decrease in the post-development rate of runoff during all storms at the modeled point of interest.

Table 12-9: Stormwater Summary of Results

Study Points	Return Period (24-hr Storm) 2-Year Storm Event		Return Period (24-hr Storm) 10-Year Storm Event		Return Period (24-hr Storm) 25-Year Storm Event	
	Peak Runoff Rate (cfs)	Runoff Volume (acre-feet)	Peak Runoff Rate (cfs)	Runoff Volume (acre-feet)	Peak Runoff Rate (cfs)	Runoff Volume (acre-feet)
Pre-Development SP1	2.30	0.32	4.93	0.65	7.28	0.95
Pre-Development SP2	4.15	0.65	8.62	1.32	12.49	1.91
Energy East Subtotal	**5.69**	**0.97**	**12.11**	**1.97**	**17.68**	**2.86**
Pre-Development SP3	0.60	0.07	1.28	0.14	1.87	0.20
Pre-Development SP4	1.58	0.235	3.20	0.47	4.59	0.68
Pre-Development SP5	5.89	1.31	11.19	2.49	15.62	3.49
Pre-Development SP6	8.29	1.23	15.63	2.32	21.74	3.26
Pre-Development SP7	3.92	0.54	7.38	1.03	10.27	1.44
Canal Subtotal	**17.52**	**3.39**	**33.54**	**6.44**	**47.00**	**9.07**
Pre Total	**23.17**	**4.35**	**45.54**	**8.41**	**64.50**	**11.93**
Post-Development SP1	2.14	0.60	4.67	1.03	6.79	1.38
Post-Development SP2	3.71	0.65	8.40	1.27	12.65	1.82
Energy East Subtotal	**5.32**	**1.25**	**11.53**	**2.30**	**17.74**	**3.20**
Post-Development SP3	0.60	0.07	1.28	0.15	1.87	0.21
Post-Development SP4	1.51	0.25	3.13	0.51	4.54	0.73
Post-Development SP5	5.40	1.76	10.94	3.11	15.94	4.25
Post-Development SP6	5.79	1.62	12.12	2.81	18.52	3.82
Post-Development SP7	2.77	0.67	5.42	1.18	7.84	1.64
Canal Subtotal	**15.59**	**4.38**	**32.22**	**7.76**	**47.68**	**10.65**
Post Total	**20.18**	**5.57**	**42.62**	**9.92**	**63.65**	**13.70**

The post-development peak runoff rates for study points 2 and 5 for the 25-year storm exceed pre-development rates, as they did when previously approved. These values are highlighted in gray in the table above. Prior to previous approval, both the Energy East and CMP property owners were contacted and waivers authorizing the increase at these study points were granted. However, the total post-development rates for the overall areas and project are all either at or below their respective pre-development rates.

The watershed routing diagrams and model outputs from HydroCAD for both the Pre-and Post-Development conditions are attached. Upon completion of the project, the condominium association will assume responsibility for overseeing the property, including inspection and maintenance of the sites, stormwater drainage system, and treatment measures. The proposed stormwater management systems have been designed to maintain predevelopment runoff conditions to the maximum extent possible, to decrease peak flow rates, and to improve water quality and thermal impacts to the Fore River Estuary System. The flow from the seven study points ultimately discharges into the Fore River Estuary System by way of existing drainage across Energy East Foundation conservation land and the CMP ROW. Finally, as the site's total discharge rate has been reduced, there will be no adverse effects, including flooding and erosion, to abutting properties or the Fore River Estuary System as a result of the project.

12.5.3 Discharge to Freshwater Wetlands Standard

We propose maintaining many of the hydrologic features that exist on the site in the pre-development condition, including large areas of forested freshwater wetlands. The project will result in stormwater discharges to these forested freshwater wetland systems. Per MaineDEP stormwater regulations, discharge of runoff to the wetlands due to a 2-year storm may not increase the mean storage depth within a wetland more than two inches above pre-development levels for more than 24-hours from the end of the storm event. Each of the discharge locations from the site are modeled by a study point. In order to evaluate the change in depth to a wetland due to stormwater discharge, the pre-development runoff volume was compared to the post-development runoff volume for a 2-year 24-hour storm. As shown in Table 9, the post-development runoff volumes increased by approximately 1.22 Acre-Foot (AF). The total non-disturbed wetland area is approximately 8.39 acres. Therefore, the total increase in volume across the on-site wetland areas is approximately 0.15 feet, or approximately 1.74 inches, which is less than the 2-inch threshold.

12.6 INSPECTION AND MAINTENANCE OF STORMWATER SYSTEMS

Schedule D of the Condominium Documents includes the language addressing inspection and maintenance of stormwater systems, as it was approved as part of the original application. A copy of Schedule D is attached. In addition, checklists for stormwater inspections and a recommended list of maintenance tasks and a schedule follow this section.

12.7 EROSION AND SEDIMENTATION CONTROL PLAN

The overall goal of the Soil Erosion and Sedimentation Plan is to restrict the potential for erosion and sedimentation at the site and down-gradient of the site, particularly adjacent to protected natural resources such as wetlands, as shown on the drawings attached to Section 19 of this Report. A variety of erosion control techniques will be implemented to achieve this goal. During construction, these include:

- Positive grades throughout the construction site to direct flow to sediment control barriers;
- Diversion barriers to keep upslope runoff from flowing through the construction site;
- Preserving and maintaining vegetated areas to the maximum extent possible;
- Installation and maintenance of sedimentation barriers adjacent to the project;
- Installation and maintenance of construction entrances at the travelled interface between stabilized and non-stabilized portions of the project site;
- Permanent seeding and mulching applied as soon as areas are at final grades; and
- Inspection of all in-place measures after every significant rainfall until permanent measures are in place.

Structural measures will be installed where shown on the Soil Erosion and Sedimentation Control Plan, which is included in the drawings attached to Section 19 of this Report; details for the proposed measures are also included in the drawings. All measures will be implemented in accordance with the "Maine Erosion and Sedimentation Handbook

for Construction: Best Management Practices"; they will be installed prior to any earth disturbing activities. All temporary measures will be removed after the areas are permanently stabilized.

Permanent erosion control measures for the business park will include vegetation and pavement. Areas of concentrated flow will be protected from erosion by establishing vegetation and riprap. All measures will be maintained in effective operating condition. The Contractor will be responsible for implementing and maintaining all erosion and sediment control measures and will use the attached maintenance inspection form or equivalent.

12.8 **ATTACHMENTS**

- Stormwater Erosion & Sedimentation Control Inspection Report Form
- Stormwater Inspection Checklist
- Stormwater Management Maintenance Tasks and Recommended Schedule
- Figure 12.1 Pre-Development Drainage Area Plan
- Figure 12.2 Post-Development Drainage Area Plan
- Figure 12.3 Post-Development Subcatchment Plan
- Pre-Development HydroCAD output (bound separately)
- Post-Development HydroCAD output (bound separately)
- Figure 12.4 Treatment Area Plan
- Condominium Document Schedule D Inspection and Maintenance

STORMWATER EROSION & SEDIMENTATION CONTROL
INSPECTION REPORT FORM

Inspectors: Date: ___ / ___ / _____

_____ of _____ (Project Owner)

_____ of _____ (Contractor)

_____ of _____

_____ of _____

Storm Event? ☐ Yes ☐ No Rainfall Amount _____ Storm Duration _____ hours

Visual Observations of Activity and Site Conditions:

Disturbed Soil Areas:

_____
_____
_____

Storage Of Soils:

_____
_____
_____

Sediment & Erosion Control Measures:

_____
_____
_____

Construction Site Entrance:

_____
_____
_____

Surface Stabilization:

_____
_____
_____

Corrective Actions Taken

Attachments (if any):

Signature:

Representing:

Representing:

STORMWATER INSPECTION CHECKLIST

Inspection by: _____ Date: _____

Stormwater Management Feature	Condition						Comments
Vegetative cover on slopes	no bare spots, no evidence of rill erosion		some bare spots, some rill erosion		large bare areas, extensive erosion		
Drainage channels/Ditches	no erosion, channels clear		some erosion and siltation		major erosion, channels clogged		
Gravel Wetlands	no siltation		some siltation		heavily silted in		
Gravel Wetlands	sideslopes free of erosion		some erosion on sideslopes		sideslopes heavily eroded		
Gravel Wetlands	inlet free of erosion		some erosion at inlet		inlet heavily eroded		
Gravel Wetlands	inlet / outlet clear		some debris		completely blocked		
Gravel Wetlands	no erosion on outlet weir		some rutting or erosion		deeply rutted and washed out		

Recommended Actions: _____

_____

Actions Completed: _____ Date: _____ Mgr. Approval: _____

STORMWATER MANAGEMENT MAINTENANCE TASKS AND RECOMMENDED SCHEDULE

TASKS	OUTLET CONTROL STRUCTURES	GRAVEL WETLANDS	CULVERTS	SCHEDULE
Inspect for sediment accumulation	X	X	X	Annually
Remove sediment accumulation	X	X	X	As needed
Clean debris	X	X	X	Early spring, fall and after major storm
Inspect for Erosion	X	X		As needed
Reestablish vegetation in erosion areas	X	X		Early spring
Rake out dead vegetation		X		Early spring, fall
Replace stone rip-rap	X	X	X	Every 3 – 5 years as needed
Inspect structural elements during wet weather and compare to as-built plans	X	X		Annually
Make adjustments or replacements as determined by wet weather observations		X		As needed
Keep records of all inspections and maintenance activities	X	X	X	Annually
Have a professional engineer perform emergency inspections upon identification of severe problems	X	X	X	As needed

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
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3. SITE AND TOPOGRAPHIC FEATURES FOR ADJACENT ROADWAY AND ABUTTING PARCELS ORIGINATE FROM CITY OF PORTLAND, ME AERIAL SURVEY COMPILED USING 2000 AERIAL IMAGES BY BRADSTREET CONSULTANTS OF MANCHESTER, MAINE. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH TWO FOOT CONTOUR INTERVALS.
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9. EXISTING WATER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE 42" WATERMAIN RELOCATION" DATED APRIL, 2001
10. UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, SOIL MAP OF CUMBERLAND COUNTY AND PART OF OXFORD COUNTY, MAINE WEB SOIL SURVEY NATIONAL COOPERATIVE SOIL SURVEY

SOIL LEGEND

BuB	Buxton silt loam, 3 to 8 percent slopes
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes
Sn	Scantic silt loam
Sue2	Suffield loam, 25 to 45 percent slopes, eroded
Sz	Swanton fine sandy loam
WmD	Windsor loamy sand, 15 to 30 percent slopes

LEGEND:

- 100' — SUBCATCHMENT FLOWPATH
- DRAINAGE AREA BOUNDARY
- (2) — SUBCATCHMENT NUMBER
- 150 — 5 FT. CONTOUR
- INTERMEDIATE CONTOUR
- WETLAND
- PROPERTY LINE
- SOILS BOUNDARY
- STUDY POINTS
- POTENTIAL VERNAL POOL LOCATION (APPROX.)

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DAVID A. SPEARS 10958 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER — 12/30/2011

REV	DESCRIPTION	DATE
DRAWN BY:	DESIGNED BY: MKC	CHECKED BY: DAS
JOE		203848\3-UT2_12_12-3.dwg

PRE-DEVELOPMENT DRAINAGE AREA MAP

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE

PORTLAND TECHNOLOGY PARK

JOB NO.:	203848.63
DATE:	DECEMBER, 2011
SCALE:	1"=100'
SHEET:	OF

FIG 12-1

\\BANGOR\Projects\213452 Madawaska - Sewer System Improvements\wip\203848.63 City of Portland\Rand Road\CAD In Progress\203848\3-UT2_12_12-3.dwg, Dec 30, 2011 - 8:50pm

24x36 SHEET
1:1

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
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11. ADDITIONAL BORINGS BY HALEY & ALDRICH DATED AUUGUST 17, 2010
12. UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, SOIL MAP OF CUMBERLAND COUNTY AND PART OF OXFORD COUNTY, MAINE WEB SOIL SURVEY NATIONAL COOPERATIVE SOIL SURVEY

SOIL LEGEND

BuB	Buxton silt loam, 3 to 8 percent slopes
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes
Sn	Scantic silt loam
Sue2	Suffield loam, 25 to 45 percent slopes, eroded
Sz	Swanton fine sandy loam
WmD	Windsor loamy sand, 15 to 30 percent slopes

LEGEND:

- SUBCATCHMENT FLOWPATH
- DRAINAGE AREA BOUNDARY
- DRAINAGE NUMBER
- 5 FT. CONTOUR
- INTERMEDIATE CONTOUR
- WETLAND
- PROPERTY LINE
- SOILS BOUNDARY
- STUDY POINTS
- POTENTIAL VERNAL POOL LOCATION (APPROX.)

RAND ROAD
MAINE TURNPIKE EXIT 47
INTERSTATE ROUTE 95
SWAN STREET
PIERCE AVENUE

BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

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WOODARD & CURRAN

DAVID A. SENUS — STATE OF MAINE — REGISTERED PROFESSIONAL ENGINEER

10/2/2015

REV	DESCRIPTION	DATE
DESIGNED BY: MKC/AEA	CHECKED BY: DAS	
DRAWN BY: JBC	22900-U12-1,12,2,12-3.dwg	

POST-DEVELOPMENT
DRAINAGE AREA MAP

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.: 229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: OF

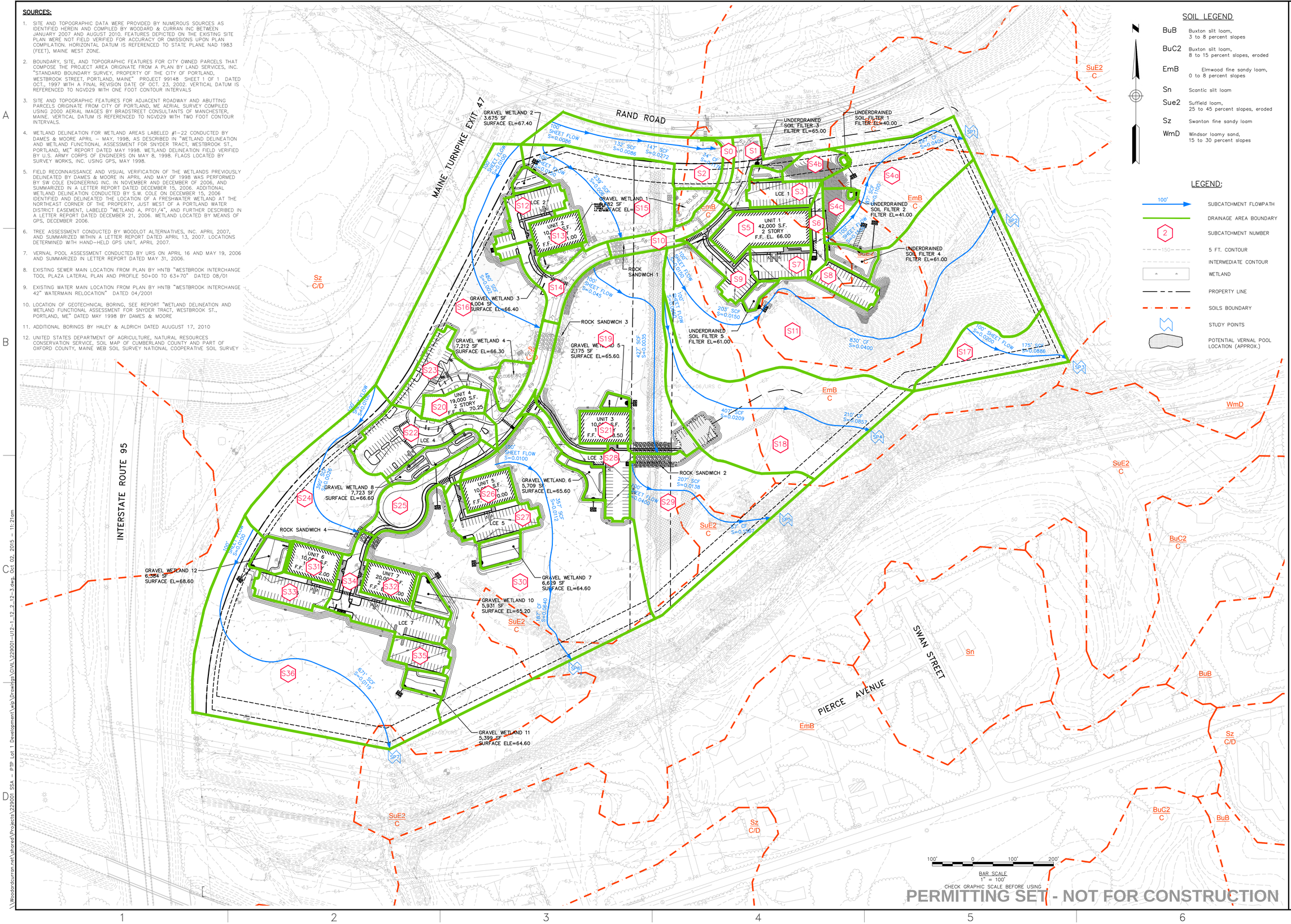
FIG 12-2

\\Woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\Civil\229001-U12-1,12,2,12-3.dwg, Oct 02, 2015 - 11:21am

24x36 SHEET
1:1

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
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- DRAINAGE AREA BOUNDARY
- SUBCATCHMENT NUMBER
- 5 FT. CONTOUR
- INTERMEDIATE CONTOUR
- WETLAND
- PROPERTY LINE
- SOILS BOUNDARY
- STUDY POINTS
- POTENTIAL VERNAL POOL LOCATION (APPROX.)

BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

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WOODARD & CURRAN

DAVID A. SENUS — STATE OF MAINE — 10/2/2015

REV	DESCRIPTION	DATE
DESIGNED BY: MKC/AEA	CHECKED BY: DAS	22900-U12-1,12,2,12-3.dwg
DRAWN BY: JBC		

POST-DEVELOPMENT
SUB-CATCHMENT AREA MAP

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.: 229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: OF

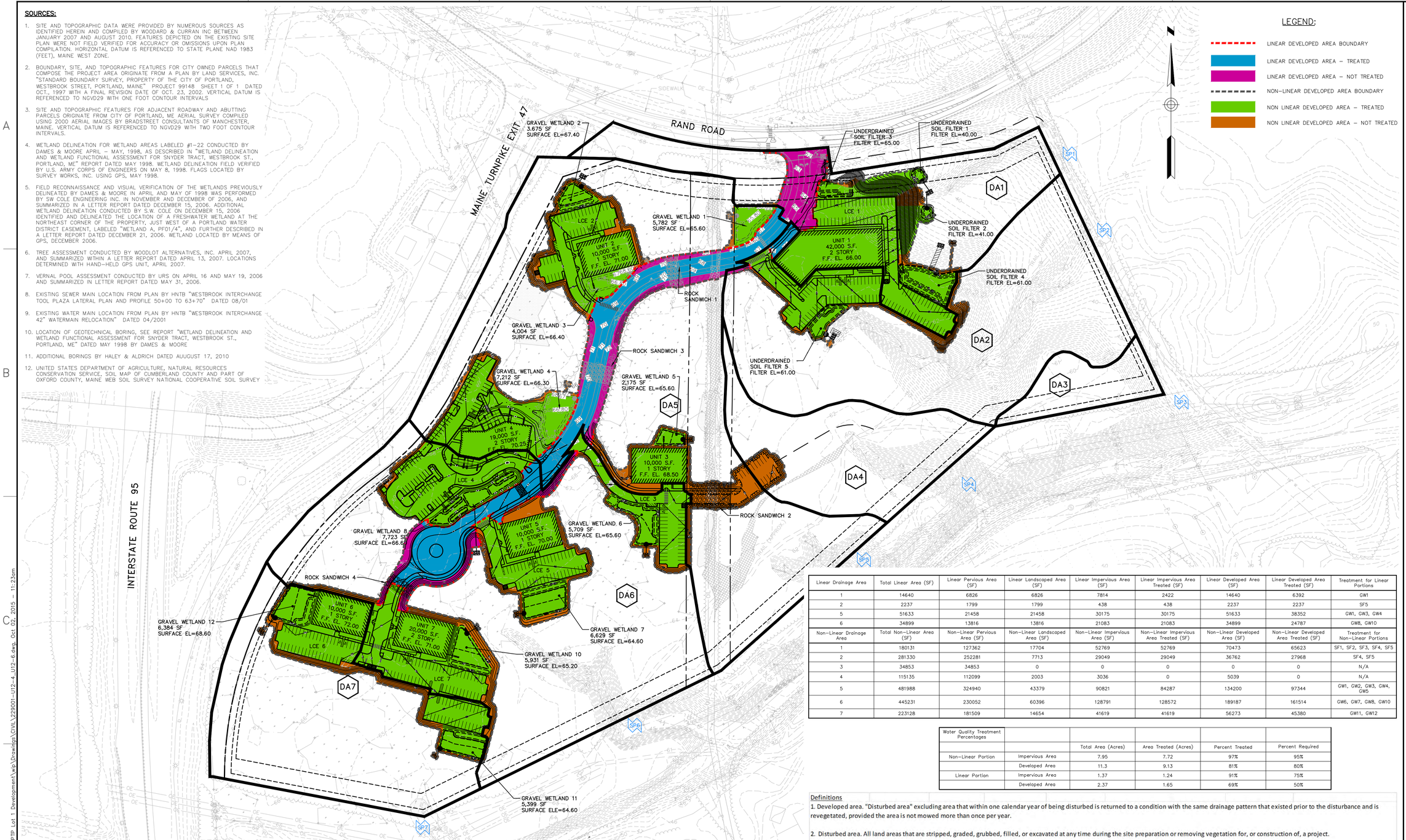
FIG 12-3

\\Woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\Civil\229001-U12-1,12-2,12-3.dwg, Oct 02, 2015 - 11:21am

HydroCAD Output Filed in Separate Volume

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
2. BOUNDARY, SITE, AND TOPOGRAPHIC FEATURES FOR CITY OWNED PARCELS THAT COMPOSE THE PROJECT AREA ORIGINATE FROM A PLAN BY LAND SERVICES, INC. "STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" PROJECT 99148 SHEET 1 OF 1 DATED OCT., 1997 WITH A FINAL REVISION DATE OF OCT. 23, 2002. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH ONE FOOT CONTOUR INTERVALS
3. SITE AND TOPOGRAPHIC FEATURES FOR ADJACENT ROADWAY AND ABUTTING PARCELS ORIGINATE FROM CITY OF PORTLAND, ME AERIAL SURVEY COMPILED USING 2000 AERIAL IMAGES BY BRADSTREET CONSULTANTS OF MANCHESTER, MAINE. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH TWO FOOT CONTOUR INTERVALS.
4. WETLAND DELINEATION FOR WETLAND AREAS LABELED #1–22 CONDUCTED BY DAMES & MOORE APRIL – MAY, 1998, AS DESCRIBED IN "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" REPORT DATED MAY 1998. WETLAND DELINEATION FIELD VERIFIED BY U.S. ARMY CORPS OF ENGINEERS ON MAY 8, 1998. FLAGS LOCATED BY SURVEY WORKS, INC. USING GPS, MAY 1998.
5. FIELD RECONNAISSANCE AND VISUAL VERIFICATION OF THE WETLANDS PREVIOUSLY DELINEATED BY DAMES & MOORE IN APRIL AND MAY OF 1998 WAS PERFORMED BY SW COLE ENGINEERING INC. IN NOVEMBER AND DECEMBER OF 2006, AND SUMMARIZED IN A LETTER REPORT DATED DECEMBER 15, 2006. ADDITIONAL WETLAND DELINEATION CONDUCTED BY S.W. COLE ON DECEMBER 15, 2006 IDENTIFIED AND DELINEATED THE LOCATION OF A FRESHWATER WETLAND AT THE NORTHEAST CORNER OF THE PROPERTY, JUST WEST OF A PORTLAND WATER DISTRICT EASEMENT, LABELED "WETLAND A, PF01/4", AND FURTHER DESCRIBED IN A LETTER REPORT DATED DECEMBER 21, 2006. WETLAND LOCATED BY MEANS OF GPS, DECEMBER 2006.
6. TREE ASSESSMENT CONDUCTED BY WOODLOT ALTERNATIVES, INC. APRIL 2007, AND SUMMARIZED WITHIN A LETTER REPORT DATED APRIL 13, 2007. LOCATIONS DETERMINED WITH HAND–HELD GPS UNIT, APRIL 2007.
7. VERNAL POOL ASSESSMENT CONDUCTED BY URS ON APRIL 16 AND MAY 19, 2006 AND SUMMARIZED IN LETTER REPORT DATED MAY 31, 2006.
8. EXISTING SEWER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE TOOL PLAZA LATERAL PLAN AND PROFILE 50+00 TO 63+70" DATED 08/01
9. EXISTING WATER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE 42" WATERMAIN RELOCATION" DATED 04/2001
10. LOCATION OF GEOTECHNICAL BORING, SEE REPORT "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" DATED MAY 1998 BY DAMES & MOORE
11. ADDITIONAL BORINGS BY HALEY & ALDRICH DATED AUUGUST 17, 2010
12. UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, SOIL MAP OF CUMBERLAND COUNTY AND PART OF OXFORD COUNTY, MAINE WEB SOIL SURVEY NATIONAL COOPERATIVE SOIL SURVEY



LEGEND:

- LINEAR DEVELOPED AREA BOUNDARY
- LINEAR DEVELOPED AREA – TREATED
- LINEAR DEVELOPED AREA – NOT TREATED
- NON–LINEAR DEVELOPED AREA BOUNDARY
- NON LINEAR DEVELOPED AREA – TREATED
- NON LINEAR DEVELOPED AREA – NOT TREATED

Linear Drainage Area	Total Linear Area (SF)	Linear Pervious Area (SF)	Linear Landscaped Area (SF)	Linear Impervious Area (SF)	Linear Impervious Area Treated (SF)	Linear Developed Area (SF)	Linear Developed Area Treated (SF)	Treatment for Linear Portions
1	14640	6826	6826	7814	2422	14640	6392	GW1
2	2237	1799	1799	438	438	2237	2237	SF5
5	51633	21458	21458	30175	30175	51633	38352	GW1, GW3, GW4
6	34899	13816	13816	21083	21083	34899	24787	GW8, GW10
Non–Linear Drainage Area	Total Non–Linear Area (SF)	Non–Linear Pervious Area (SF)	Non–Linear Landscaped Area (SF)	Non–Linear Impervious Area (SF)	Non–Linear Impervious Area Treated (SF)	Non–Linear Developed Area (SF)	Non–Linear Developed Area Treated (SF)	Treatment for Non–Linear Portions
1	180131	127362	17704	52769	52769	70473	65623	SF1, SF2, SF3, SF4, SF5
2	281330	252281	7713	29049	29049	36762	27968	SF4, SF5
3	34853	34853	0	0	0	0	0	N/A
4	115135	112099	2003	3036	0	5039	0	N/A
5	481988	324940	43379	90821	84287	134200	97344	GW1, GW2, GW3, GW4, GW5
6	445231	230052	60396	128791	128572	189187	161514	GW6, GW7, GW8, GW10
7	223128	181509	14654	41619	41619	56273	45380	GW11, GW12

Water Quality Treatment Percentages					
		Total Area (Acres)	Area Treated (Acres)	Percent Treated	Percent Required
Non–Linear Portion	Impervious Area	7.95	7.72	97%	95%
	Developed Area	11.3	9.13	81%	80%
Linear Portion	Impervious Area	1.37	1.24	91%	75%
	Developed Area	2.37	1.65	69%	50%

Definitions

1. Developed area. "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.

2. Disturbed area. All land areas that are stripped, graded, grubbed, filled, or excavated at any time during the site preparation or removing vegetation for, or construction of, a project.

3. Impervious area. The total area of a parcel that consists of buildings and associated constructed facilities or areas that will be covered with a low–permeability material, such as asphalt or concrete, and areas such as gravel roads and unpaved parking areas that will be compacted through design or use to reduce their permeability.

4. Landscaped area. An area of land that has been disturbed and re–planted or covered with one or more of the following: lawn or other herbaceous plants, shrubs, trees, or mulch; but not including area that has reverted to a natural, vegetated condition. A field or meadow is considered landscaped if it is mowed more than twice per twelve month period.

5. Linear portion of a project. The portion of a project consisting of a utility corridor, road, driveway, railroad track outside a yard or station, or similar transportation corridor, as determined by the department.

100' 0 100' 200'

BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

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DAVID A. SENUS 10791 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER
10/2/2015

REV	DESCRIPTION	DATE

DESIGNED BY: MKG/AEA
DRAWN BY: JBC
CHECKED BY: DAS
229001-U12-4_U12-6.dwg

POST DEVELOPMENT
STORM WATER TREATMENT
OVERAL PLAN

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: OF

FIG 12-4

\\woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\CIVIL\229001-U12-4_U12-6.dwg, Oct 02, 2015 – 11:23am

Declaration of Condominium
Portland Technology Park Condominium

SCHEDULE D

Inspection and Maintenance Requirements

General inspection and maintenance during and after construction must take place in accordance with the requirements outlined in Chapter 500, Stormwater Management, Appendix B, Inspection and Maintenance, and Stormwater Management, Maine Department of Environmental Protection publication No. DEPLW0738. The condominium association will be responsible for implementing maintenance and inspection requirements for the stormwater management systems associated with the development. During the period that the City of Portland is the only member or one among other members of the condominium association, the contact person under responsible charge for this, until such time as this responsibility is transferred (as noted below), is:

John Emerson
Wastewater Facilities Coordinator
55 Portland Street
Portland, Maine 04101
Phone: (207) 874-8468

Upon development of the building sites, additional members will join the condominium association. These documents outline the maintenance and inspection responsibilities of the individual building tenants and the condominium association.

The responsible party will ensure that stormwater management facilities are properly maintained and inspected. Specifically, the underdrained soil filters, stormwater gravel wetlands, outlet structures, outlet pipes, culverts, roadways and parking lots will be inspected and maintained per the guidance outlined herein.

Inspection and Maintenance of Stormwater Systems

Upon completion of the project, the condominium association (association) will assume responsibility for overseeing the property, including the inspection and maintenance of the site's stormwater drainage system and treatment measures. The inspection and maintenance outlined in Chapter 500 Stormwater Regulations, and in the Maine Department of Environmental Protection's Stormwater BMP Manual, will be followed. Inspection and maintenance activities subject to the Post-Construction Stormwater Management Plan will be carried out in conformance with Chapter 32 of the City of Portland Code of Ordinances as follows.

A person with knowledge of stormwater management and erosion and sediment control, including municipal and state regulations and the standards and conditions in the permit, shall conduct the inspections and perform maintenance of the facilities at least annually. The association is responsible for maintaining records of all inspection and maintenance activities, to be submitted in the annual report to the City Department of Public Services (DPS) on or by June 30th of each year, certifying the successful inspection of all BMPs and that noted deficiencies in the stormwater management facilities have been

repaired. The association shall include the DPS filing fee with the annual report.

Specifically, the condominium association will assume inspection and maintenance responsibility for the underdrained soil filters and gravel wetlands.

The condominium association will also be required to submit a certification of the following to the Maine Department of Environmental Protection within three months of the expiration of each five-year interval from the date of issuance of the permit.

a) Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

b) Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

c) Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department, and the maintenance log is being maintained.

Pavement and Drainage Structures

All proposed drainage structures located on site, such as culverts, basins and piping, shall be inspected annually to ensure they are being well maintained and are adequate in carrying stormwater flows throughout the site. Parking and paved areas, such as the access road, will be inspected annually each spring. Visual inspections will enable site roads and parking areas to be kept clean and clear through periodic sweeping (at minimum annually) and winter plowing as required. The inspections will also ensure pavement markings are repainted as needed to maintain proper traffic circulation and parking space delineation. Paved areas will be plowed and sanded as often as necessary to maintain safety. Periodic sweeping of pavement (at minimum annually) will keep the parking areas clean and will reduce the amount of sediment available to enter the stormwater management systems, in turn reducing the need to clean these systems.

Gravel Wetland Systems

Gravel Wetlands maintain a saturated gravel bed and provide treatment of stormwater through physical chemical and biological processes within the plants and gravels/soils of the system. Gravel Wetlands are well suited for poorly draining sub-soils due to the limited hydraulic head requirement (difference in elevation between what flows in and what flows out) and lack of required separation from the groundwater table. Because infiltration is not designed to occur, separation from groundwater is not required and the systems are sited much like stormwater ponds.

Monitoring and maintenance is critical for the proper operation of gravel wetland systems. First year post-construction monitoring differs primarily by its increased frequency to assure proper vegetative establishment and system functioning. Post-construction routine monitoring is based on USEPA requirements for good housekeeping practices.

Unlike other filtration systems, a subsurface gravel wetland is a subsurface, horizontal filtration system and does not rely upon the surface soils for treatment. As such, surface infiltration rates are

expected to be low and are not used for the criteria for cleaning/maintenance. Rather, stormwater conveyance into the subsurface gravel layer is the critical hydraulic performance measure.

1st Year Post-Construction: Inspection frequency should be after every major storm in the first year following construction.

- ❑ Ensure system drains within 24-72 hrs (within the design period, but also not so quickly as to minimize stormwater treatment).
- ❑ Water plants as necessary during the first growing season
- ❑ Re-vegetate poorly established areas as necessary
- ❑ Treat diseased vegetation as necessary
- ❑ Quarterly inspection of side slopes, earthen embankments, forebays and inlets; repair eroded areas, especially on slopes
- ❑ Check inlets, outlets, and overflow spillway for blockage, structural integrity, and evidence of erosion.

Post-Construction: Inspection frequency should be at least every 6 months thereafter. Inspection frequency can be reduced to annually following 2 years of monitoring that indicates the rate of sediment accumulation is less than the cleaning criteria listed herein. Inspections should focus on:

- ❑ Check the filter surface for dense, complete, root mat establishment across the wetland surface. Thorough vegetation with grasses, forbs, and shrubs is necessary.
- ❑ Check the gravel wetland surface for standing water or other evidence of riser clogging, such as discolored or accumulated sediments. More detail in section below.
- ❑ Check the sedimentation forebay for sediment accumulation, trash, and debris.
- ❑ Ensure system drains within 24 to 72 hrs.
- ❑ Check inlets, outlets, valves, weir walls, orifice structures, and overflow spillway for blockage, structural integrity, and evidence of erosion.
- ❑ Check side slopes and earthen embankments; repair eroded areas, especially on slopes.
- ❑ Remove decaying vegetation, litter, and debris.

Gravel Wetland Maintenance

Cleaning Criteria for Sedimentation Forebay: Sediment should be removed from the sedimentation chamber (forebay) on an annual basis. Sediment can be removed with hand tools or hand operated power equipment (power brooms, vac equipment, etc.). If larger equipment is necessary, this equipment should not track on the wetland surface. Disturbed areas should be revegetated as necessary. Removed sediments should be dewatered (if necessary) and disposed of in accordance with state solid waste guidance.

Cleaning Criteria for Gravel Wetland Treatment Area: Sediment should be removed from the gravel wetland surface when it accumulates to a depth of several inches across the wetland surface. Sediment should be removed with hand tools or hand operated power equipment (power brooms, vac

equipment, etc) rather than heavy construction equipment to avoid compaction of the gravel wetland surface. If larger equipment is necessary, this equipment should work adjacent to the gravel wetland and should not track on the wetland surface. Removed sediments should be dewatered (if necessary) and disposed of in accordance with state solid waste guidance.

Draining and Flushing Gravel Wetland Treatment Area: For maintenance it may be necessary to drain or flush the treatment cells. Flushing of the risers and horizontal subdrains is most effective with the entire system drained. Flushed water and sediment should be collected and properly disposed.

Inlets: Inlets to each stormwater treatment area should be kept open and in good working condition. This is particularly important around curb breaks and/or sidewalk culverts. These locations should be marked on the roadway at the completion of construction to allow for winter snow removal. All eroded areas should be repaired.

Initial Turf Maintenance (when applicable): Sod or seeded areas at inlets or along gravel wetland embankments should ideally be mowed no lower than 3" for optimum grass health and to minimize erosion.

Large Debris: Large debris within the ponding area should be removed.

Weeds in the Gravel Wetland Area: Periodic weeding of the gravel wetland areas and forebays may be necessary, particularly in the landscaped portions of the stormwater management system. Hand weeding is required as the use of herbicides is not recommended.

Surface Mulch Layer (when applicable): Areas devoid of mulch should be remulched by hand. Every year, in the spring, a fresh layer of mulch should be added to the soil filter area as needed.

Sedimentation (or Apparent Clogging) of Wetland Surface Area: To correct a standing water problem, the following remedial actions are recommended:

1. Check adjacent groundwater levels. High seasonal groundwater may influence system drain-down. Inspect system outlet for inundation or debris blockages.
2. Evaluate the drainage area to the treatment area to identify any potential sources of sediment, such as an erosive condition, that may be contributing to the clogging of the device. If a source is identified, it is recommended that that source be eliminated to the fullest extent practicable before proceeding with the remaining recommendations provided below.
3. Flush the subdrains. Use cleanouts to flush the subdrains. Sediment in the drains may be preventing the system from draining. Make sure to provide a way to capture any flushed sediment before it enters the stream environment or storm drain system downstream of the device. If, after flushing the subdrains, the device continues to hold water, the wetland soil may be contaminated. As such, following the guidelines provided below is recommended.
4. Gage the extent of soil contamination. To do this, it is recommended that one or more test pits be dug with a shovel and that the soil layer be evaluated for contamination. Once the levels of contamination have been determined (for example, the top 4" of soil appears to be contaminated), it is recommended that you proceed with the remaining remedial actions.
5. Harvest the plants (when applicable). Care should be taken in the removal and temporary storage of the plants so that as many as possible can be harvested for replanting in the wetland area once the functioning of the device has been restored sufficiently.
6. Remove the top few inches of contaminated soil plus an additional 2-inch of soil, and replace the removed soil with a clean soil mix in accordance with the soil mix specification.
7. Monitor the function of the system during the next two to three rain events. If the device appears to be draining as intended (e.g., there is no standing water 72 hours following a rain event), proceed with the remaining remedial actions. If the area continues to hold

standing water, then the entire soil mix and the subdrains may need to be removed and replaced. Reuse of any undamaged subdrains may be possible once they have been cleaned thoroughly.

8. Replant the harvested plants, and replace any plants that were rendered unusable during or following their removal from the soil filter area.
9. Water the plants in the soil filter for the next two or more weeks unless there is sufficient rainfall. This will help the plants to reestablish.

In addition to the inspection and maintenance of stormwater systems, parking and paved areas, such as the access road, will be inspected annually each spring. Visual inspections will enable site roads and parking areas to be kept clean and clear through contracting periodic sweeping and winter plowing as required. The inspections will also ensure pavement markings are repainted as needed to maintain proper traffic circulation and parking space delineation. Paved areas will be plowed and sanded as often as necessary to maintain public safety. Periodic sweeping of pavement will keep the parking areas clean and will reduce the amount of sediment available to enter the gravel wetlands, in turn reducing the need to clean these devices.

Stormwater inspection and maintenance requirements are summarized in more detail in the following Stormwater Inspection Checklist and Stormwater Management Maintenance Tasks and Recommended Schedule.

Underdrained Soil Filter Systems

The underdrained soil filters will be inspected semi-annually in spring and fall. Additionally, for the first six months, each filter will be inspected following major storm events. These inspections will ensure that there is no erosion in the soil filter, the filter remains capable of filtering runoff within two days, and sediment does not build up. Should the soil filter to drain within 72 hours, the top several inches of the filter media will be removed and replaced with fresh material. Attachment 12.8 includes an inspection form to be used during all soil filter inspections.

Maine DEP recommends mowing at least twice each year to allow visual inspection and to prevent the growth of woody plants. Sediment will be removed annually. Any eroding areas will be repaired immediately. Should a basin or swale fail to filter the runoff from a storm within two days, the soil filter layer may need to be retilled. No basin or swale will be used for snow storage or for any activities that involve heavy foot traffic. Vehicle traffic within the filter basin will not be allowed.

GRAVEL WETLAND/UNDERDRAIN SOIL FILTER
VISUAL INSPECTION RECORD

____INITIAL STORM INSPECTION: For the first six months perform inspections after each major storm.
____SEMIANNUAL INSPECTION: Following the first six months, inspect twice annually, in the spring and the fall.

Date: _____ Time: _____
Location: _____
Last Date and Approximate rainfall amount (in): _____
Estimated depth of undrained water in soil filter (in): _____

Characteristics of Soil Filter:

Vegetation Condition: _____
_____
Sedimentation Present (Y/N): _____ Amount (depth over filter): _____
Filter Media / Wetland Soil Condition (i.e. erosion, rilling, etc.): _____
_____
_____
Outlet Control Structure Condition: _____
Oil Sheen (Y/N): ____ Trash (Y/N): _____ Amount: _____
Other observances: _____
_____

Maintenance:

Task	Completed Since Last Inspection (Y/N)*	Needs to be Completed (Y/N)
Annual sediment removal		
Semiannual mowing		
Debris clean-out at beehive grate		
Woody vegetation control mowing/cutting		

** If yes, list date (month, year) when maintenance activity was performed.*

Observations of drainage area during visual monitoring: _____
_____
_____

Follow-up actions required following inspection (i.e. removal and replacement of top layer of material):

_____
_____

Signature of person conducting visual monitoring:

_____ _____
Name Date
_____

17. CONSISTENCY WITH PORTLAND TECHNOLOGY PARK DESIGN GUIDELINES

A set of Design Guidelines was developed for Portland Technology Park in 2012. These guidelines were prepared for the City of Portland by Scott Simons Architects and Woodard & Curran. The goal of the Design Guidelines was to establish a set of standards associated with buildings and architecture, open space, energy and environmental requirements to create a cohesive physical environment within the Technology Park. The drawings included with this report include site plans, landscaping plans, and architectural plans that show the proposed LCE 4 development. Also attached to this sections are renderings showing a representation of the proposed building and site. The proposed development of LCE 4 will follow the Design Guidelines as follows.

17.1 DEVELOPMENT GOALS

The City of Portland has identified that the goal of the Portland Technology Park is to create a "forward thinking, low impact, and environmentally friendly Technology Park development." The proposed development will meet this goal as outlined herein by exemplifying innovative design, durable materials, and high performance building principals.

17.1.1 Design Quality

Scott Simons Architects has a long track record of designing innovative buildings, with projects regularly winning awards for both design and performance. The success of our design process has been refined over twenty years by consciously listening to clients and closely involving them in a collaborative approach with the whole design team.

17.1.2 Durability

The materials to be used in this project include metal panel, cementitious panels, and thermally treated wood. All materials are essentially maintenance free with the exception of the thermally treated wood. The thermal treatment improves the stability of the wood and enhances the decay resistance and longevity of its lifespan.

17.1.3 Energy/Environmental Performance

The project is designed to significantly outperform energy code requirements, as well as meet or exceed the goals of the Portland Technology Park for energy use for heating, cooling, and lighting.

17.2 SITE DESIGN

17.2.1 Design Relationship to Site

As demonstrated throughout this Section, the proposed project is compatible with the following components of the Portland Technology Park Design Guidelines and will therefore be unified relative to other building developments and common areas within the park:

- Building Design Standards;
- pedestrian and vehicular circulation plans;
- design of open spaces;
- drainage;
- topography;
- vegetation; and
- preservation of natural features.

Integration of open spaces and natural features have been achieved by incorporating outdoor amenities for the benefit of users of the site, such as outdoor seating areas and trash and recycling receptacles.

17.2.2 Stormwater Management and Site Design

The Stormwater Management and Site Design utilizes low impact development (LID) strategies to mimic the existing site hydrology by limiting piped infrastructure, limiting increases to the steepness of site grades, and maximizing surface stormwater conveyance and treatment through the use of gravel wetlands. The design consists of curb cuts with surface flow to sediment forebays leading into gravel wetlands in place of traditional closed drainage systems. Impervious cover will be reduced by utilizing reduced parking dimensions (8 feet, 2 inches x 18 feet). The proposed gravel wetlands have also been designed to manage post-development runoff rates, as described in Section 12 of this Report.

A Tier 2 NRPA Permit Application was submitted on May 11, 2011, and approval was granted in April of 2012 for the Portland Technology Park; a minor revision to this application has been submitted for the proposed work associated with LCE 4. The proposed Site has been designed to minimize impacts to wetlands. The total wetland impact anticipated for the entire Technology Park has not been increased by the layout changes required for the proposed LCE 4 development.

17.2.3 Materials or Wastes

There will be both a designated trash dumpster and recycling dumpster in an enclosed area away from the building and the Technology Park road. Access to the dumpster will be via the parking lots. No materials or wastes shall be deposited on any area of the site in such form or manner that they may be transferred beyond the lot boundaries by natural causes or forces. The Patrons-Oxford Insurance Company will contract with a waste management service to collect and remove waste and recyclables. All materials will be transported and disposed of by a licensed processing or disposal facility in accordance with applicable laws and regulations. Patrons-Oxford Insurance Company will also implement a pollution prevention program, including sweeping of paved areas.

As with any construction project, the proposed construction will generate construction, demolition, and land-clearing debris. The contractor(s) for the construction work will be fully responsible for handling all waste generated by the project and for managing and disposing of it in accordance with Maine Solid Waste Management Regulations - 06-096 CMR 400-409. The contractor(s) will be bound by contract to dispose of all materials in full accordance with applicable Maine regulations and approval of the City of Portland. All efforts will be made during construction to minimize waste and to recycle.

Construction debris will be transported to a waste management facility licensed to accept the waste materials. Trees cleared will either be harvested and sold, ground down to create erosion control mix for onsite applications, or disposed of at an approved facility. Stumps will be disposed of at an approved facility and no stumps, refuse vegetation or other debris created by clearing or construction operations will be disposed of onsite. All material which might cause fumes or dust, or constitute a fire hazard if stored out-of-doors, shall be stored in enclosed containers.

17.2.4 Soil Erosion and Sediment Control

An erosion and sedimentation control plan has been developed for the Site, which includes the latest Maine DEP approved erosion and sediment control measures to reduce pollution from construction activities. Frequent, documented inspection of erosion and sediment control measures during construction shall be required in accordance with local and state regulations. This is described in more detail in Section 12.

17.2.5 Traffic

LCE 4 has been designed with a smaller footprint and smaller parking lot than originally identified as part of the Technology Park design, resulting in traffic that is equal to or less than the originally approved design. Further discussion of traffic can be found in Section 12 of this report.

17.2.6 Parking Lots

Patrons Oxford anticipates 60-65 permanent employees, with a small provision of transient employees from the parent company. The proposed parking lots have been designed with respect to site access, building access, and landscape qualities. Parking spaces have been designed to reduce impervious surface by utilizing reduced parking dimensions (8 feet, 2 inches x 18 feet). Shade will be provided via landscaping to reduce heat islands and minimize impact on microclimate. Further discussion of parking can be found in Section 12 of this report.

17.2.7 Sidewalks

The proposed project includes internal site sidewalks along portions of the driveway and parking lots that transition to larger terrace areas around major building entrances. These sidewalks have been designed to provide safe egress and enhance the building entrance. Handicap accessible ramps have been provided at crossings and at the designated handicap parking spaces to provide ADA accessibility.

17.2.8 Bicycle Racks

Bicycle parking has been provided in accordance with City Standards to encourage reduction in pollution and land development impacts from automobile use. A total of 7 bicycle racks, each providing space for two bicycles will be provided in the rear of the building near the anticipated employee entrance area.

17.3 EXTERIOR LIGHTING

The exterior lighting strategy is in accordance with the Design guidelines. The lighting fixture used for the roadway and parking areas is the same fixture associated with the design of the Technology Park. Wall-mounted light fixtures will be installed on the back wall of the building and at entrance doors on end walls. Additional lighting at the entrance of the building is recessed in the building's overhang to illuminate the entrance as well as eliminate any light trespass to the sky or outward to the site. Additional site lighting is limited to certain occupied areas and pathways with bollard type fixtures that illuminate downwards and out with a short throw to limit the impact on nocturnal environments. A photometric plan showing that the proposed site lighting will not have significant impact on the surrounding environment is attached.

17.4 SIGNAGE

Signage will be located both in the front of the building, as well as the west side of the building visible from the highway. Material choice will be in line with the building's exterior materials. Branding and signage design is currently ongoing, and permit applications for signage will be filed separately.

17.5 LANDSCAPING

The landscape plan for LCE 4 has been developed in response to the existing site condition and the proposed architecture. The existing site is currently wooded with wetlands throughout it. This landscape plan uses predominately native plant species to re-naturalize the project area and seamlessly stitches the new building into this wooded environment. The landscape architect has met with Jeff Tarling, the City of Portland's Arborist to discuss the proposed landscaping for the site.

The landscape plan can be divided into distinct zones; a building zone, parking area zone, gravel wetland zone, and rain garden zone. While these zones have distinct functions, the plant material within each of the zones overlaps to unify the parts of the project area into a complete whole. To add to this unification effort, a native conservation seed mix is carried throughout the project area.

Within the building zone there is a front and back terrace and front arrival/drop-off area that includes native trees and shrubs, and perennials for accent. The parking lot zone includes various trees in the parking islands and shrubs and

ornamental grasses as an understory to minimize the visual impact of the parking areas. The gravel wetland and the rain garden zones utilize wet-loving plants to naturalize these elements.

17.6 BUILDING DESIGN STANDARDS

The proposed building conforms to the building standards set forth in the Portland Technology Park Design Guidelines as outlined below.

17.6.1 Building Massing and Form

The Building Massing and form is a subtle shift of the rectangular footprint to better utilize its southward orientation for day-lighting purposes. The roof clerestory of the building filters natural light into the central double height volume in the building.

17.6.2 Zoning Standards

A narrative discussing the zoning standards associated with the proposed project is provided in Section 6 of this Report. The project will conform to all applicable standards, except as noted in Section 6.

17.7 BUILDING ENVELOPE

17.7.1 Exterior Siding

Exterior siding will consist of Thermally Treated Wood, Metal Panels, and Cementitious Wall Panels.

17.7.2 Windows

Windows will consist of thermally broken aluminum storefront system that meets or exceeds the Design Guidelines.

17.7.3 Entrances

The primary entrance is located on the street-side of the building under an overhang for protection against the elements. Vestibules with inner and outer sets of doors are used at the primary entrances.

17.7.4 Roofs

The building has both flat and sloped roofs. Roofs are pitched a minimum of ¼-inch per foot and covered with single-ply membrane. Membrane roofing SRI values are being reviewed against current best practice recommendations.

17.7.5 Exterior Trim and Detailing

All Trims and details will be executed to match and/or enhance the exterior materials.

17.8 ENERGY & ENVIRONMENTAL STANDARDS

17.8.1 Building Materials

The proposed building is designed to utilize renewable resources and minimize embodied energy by use of a heavy braced wood frame for the primary structural system.

17.8.2 Exterior Envelope Thermal Performance

The thermal performance of the exterior envelope is designed to exceed the standards set forth in the Design Guidelines.

17.8.3 Water Conservation

Low flow plumbing fixtures will be used throughout. All stormwater runoff, including roof runoff, will be diverted into new and existing gravel wetlands on site.

17.8.4 Shading Devices and Ventilation

Excessive solar gains will primarily be managed through the specification of high SHGC glazing, and highly efficient mechanical ventilation systems with energy recovery will be utilized for fresh air delivery.

17.8.5 Lighting

LED fixtures will be used throughout the building.

17.8.6 Mechanical Systems

Mechanical systems are designed to meet or exceed the standards set forth in the design guidelines.

17.8.7 Alternative Energy

If budget allows, solar photovoltaic panels are proposed on the south-facing roof.

17.9 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN PRINCIPLES

The layout of the site has been designed to provide a safe environment for employees who use the site on a daily basis as well as occasional visitors.

17.9.1 Physical Features

Walkways and exterior patios provide greater visibility and surveillance opportunities throughout the site.

17.9.2 Lighting

Exterior Lighting meets or exceeds standards set forth in the Design Guidelines and has been designed with perceptual quality and safety in mind.

17.9.3 Mechanical Surveillance Systems

Surveillance systems will be present at the primary building entries; further extents are still under review.

17.9.4 Access Management

Site access is routed by the building's primary entrance to both facilitate way-finding and to help provide for site oversight and control. The single driveway entering the property passes by the main entrance, allowing for a visual of all vehicles entering and exiting the property.

17.9.5 Orientation and Wayfinding

Other than the primary signage at the entrance of the building site, the site organization and building form convey a clear and distinct entry sequence to the building by focusing on the two main building entrances. Parking will be assigned and a reserved set of visitor parking spots will be labeled. Internal way-finding will be facilitated by clear views to the central double height space as well as room signage.

17.9.6 Mechanical Access Control

Keycard access will be utilized at all doors in effect 24 hours a day, seven days a week. Access for the public will be granted through a video/intercom communication system to a designated individual within the building.

17.9.7 Territorial Reinforcement

The single site entrance, building siting, and the location of the public entrances and parking work together to define public, semi-public, and private spaces in the site development. Public and private spaces are further clarified through the delineation of the site design and use of materials.

17.10 ATTACHMENTS

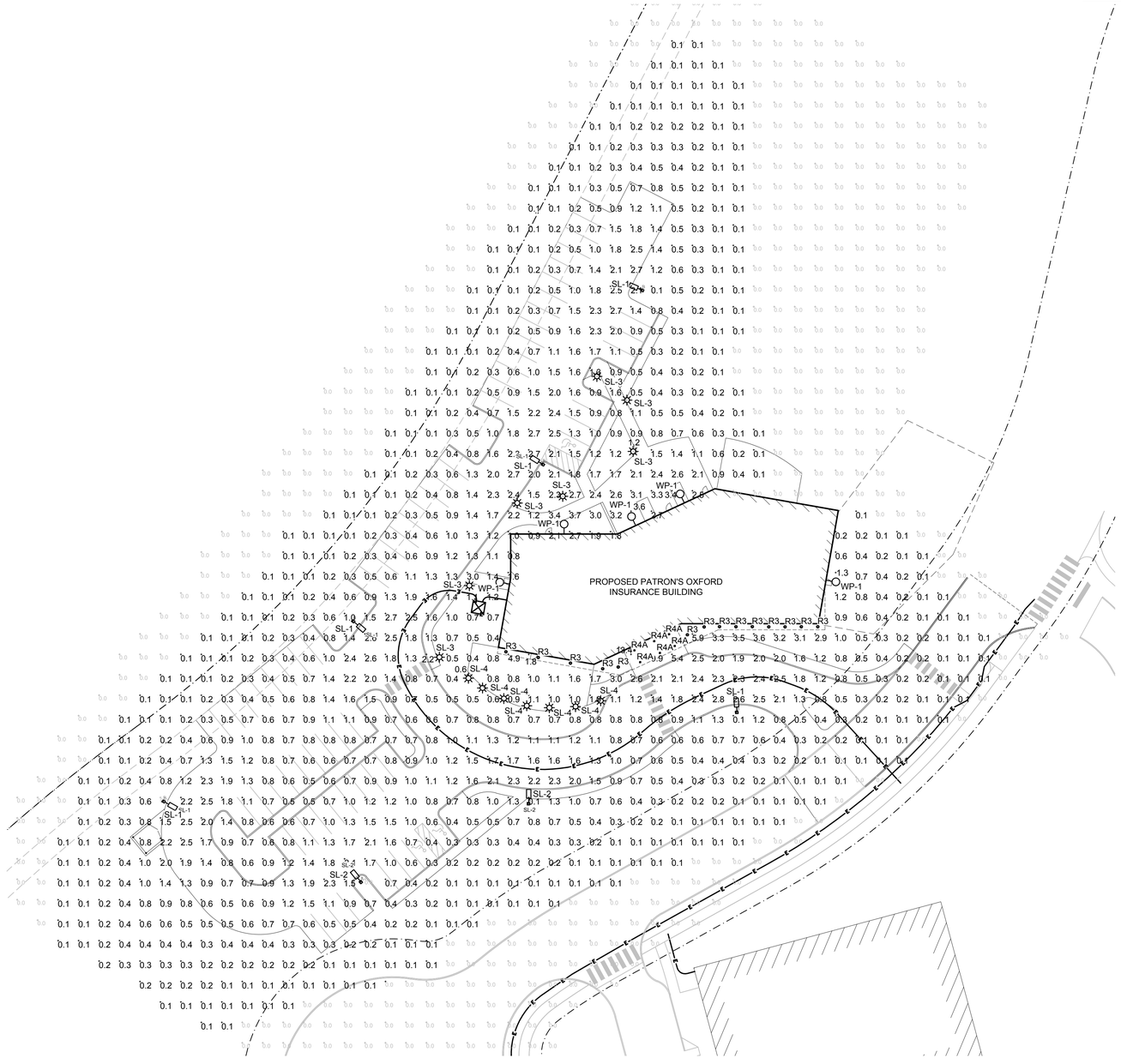
- Architectural Renderings
- Lighting Photometric Plan

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MFR	CATALOG SERIES NUMBER SEE NOTE 1	MOUNTING	VOLTS	LAMP		KEY NOTES
						WATTS	TYPE	
SL-1	POLE LIGHT	HOLOPHANE	LEDG-120-35-L2	30' POLE	120		LED ARRAY 3500K	
SL-2	POLE LIGHT	HOLOPHANE	LED-120-35-L3	30' POLE	120		LED ARRAY 3500K	
SL-3	43" HIGH BOLLARD	LOUIS POULSEN	FLINDT-B	GROUND	120	15	LED ARRAY 3000K	
SL-4	DECORATIVE BOLLARD	HUNZA LIGHTING	TG/L-RU-3	GROUND	120	7	LED ARRAY 3000K	
WP-1	LED WALLPACK	LUMARK	XTOR5A-N	20'-0" AFG	120	84	LED ARRAY 3500K	
R3	RECESSED LED WITH FROSTED GLASS	SHAPER	340-4-DL-LED835/1/25HO-CYF-DMR7	RECESSED	120	24.9	LED ARRAY 3500K	
R4A	4" SQUARE LED DOWNLIGHT	IRIS	P406TAT-RA4X4-MH4LED-15-V935	RECESSED	120	14.4	LED ARRAY 3500K	
	NOTES							
1	**NOTE THAT THESE NUMBERS ARE NOT COMPLETE CATALOG #'S. PROVIDE ALL REQUIREMENTS ON SCHEDULE,NOTES, SPECS, AND DRAWINGS COMBINED.**							

PARK & DRIVE ILLUMINATION STATISTICS

AVERAGE	MAXIMUM	MINIMUM	AVG/MIN RATIO	MAX/MIN RATIO
1.24 FC	3.1 FC	0.2 FC	6.20	15.50



A1	PROPOSED SITE LIGHTING
1"=30'-0"	

scott simons architects
designed for human potential

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Allied Project No: 15-023

Cad File: 14023_ES-100.dwg

STATE OF MAINE
CATHERINE A. FAUCHER
No. 7575
REGISTERED PROFESSIONAL ENGINEER

PROJECT NAME:

PATRONS OXFORD OFFICES

PORTLAND TECHNOLOGY PARK
RAND ROAD, PORTLAND, ME

SEAL:

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REVISION:

1	DATE
2	DATE
3	DATE
4	DATE
5	DATE
6	DATE

DATE OF ISSUE: Oct 02, 2015
PROJECT NUMBER: 2105-0100 Patrons Oxford
STATUS: Issued for permitting
NOT FOR CONSTRUCTION

PROPOSED SITE LIGHTING PLAN

ESL-100

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N:\Projects\2015\15023 - Patrons Oxford Insurance Building\00 Drawing Files\15023_Electrical Site Plan.dwg Oct 02, 2015 - 12:37pm

5. EVIDENCE OF STATE AND/OR FEDERAL APPROVALS

In addition to the City's Level III Site Plan Review, the following State permits are required:

- A Maine Department of Environmental Protection (DEP) Site Location of Development (SLOD) Permit Application and a Tier 2 Natural Resources Protection Act (NRPA) was submitted on May 11, 2011, and approval was granted in April of 2012; amendments to these applications have been submitted for the proposed work associated with LCE 4. The applicant and its consultant team are actively working with the Maine DEP at this time. A copy of the full application to the Maine DEP is on file with the City of Portland Clerk's office for public review. An electronic copy of the application has been provided with this Site Plan application for your reference.
- Approval from the US Army Corps of Engineers (ACOE) was also obtained in March of 2012; a request for a revision to this permit authorization was also submitted for the proposed work associated with LCE 4. The applicant and its consultant team are actively working with the ACOE at this time.

Any revisions resulting from the review of these other permit applications will also be addressed with the City, and copies of approvals will be provided when they are received.

6. ASSESSMENT OF ZONING

6.1 ZONING HISTORY

The City purchased the 46-acre Snyder Tree Farm property in 1999. The property had been zoned for residential use until 1994, when the majority of it was rezoned to Moderate Impact Industrial (I-M), as recommended by the Portland Industry and Commerce Plan. The US Postal Service proposed a regional distribution facility for the site, which met with significant neighborhood opposition. The City Council then appointed a task force to prepare a neighborhood plan, which became the Outer Brighton Avenue Task Force Report. The Council enacted the report's recommendation to rezone a portion of the City's Rand Road property to Office Park zone (OP) in 2001 as a means of promoting high-quality office uses that are compatible with surrounding residences and environmentally-sensitive land.

Twenty-five (25) acres were rezoned to OP and the remaining 20 acres of City-owned land as well as the adjoining parcels held by Union Water Power and CMP (28.81 acres) were rezoned to Resource Protection zone (RPZ). The developable areas in OP were then reduced again as the Maine Turnpike Authority needed an additional 5.45 acres for the new interchange. This left about 20 acres of the City-owned property in OP. The City's Economic Development Division was focused on developing a business park on OP-zoned property. It determined that the 20 acres, of which a substantial proportion was wetlands, were not sufficient in size for a viable business park. Therefore, it sought to have 6.5 acres of RPZ rezoned to OP, and 1 acre in OP that was wetland rezoned to RPZ. The Council approved this rezoning request in 2006, with a net gain to OP of 5.5 acres. This brought the City-owned OP property to the current size of approximately 26 acres. A total of 208 acres is zoned RPZ in the vicinity of the Fore River Marsh and Rand Road.

As part of the prior approval process for the Technology Park, a set of design guidelines was developed as a basis for the development of the Limited Common Elements (LCEs) within the Park. LCE 4, the lot proposed for development at this time, is located entirely within the OP Zone. The proposed development aligns with the zone's central purpose of providing a "campus-like" office complex that is compatible with the natural surroundings, and has been designed to follow the established design guidelines. The buildings, parking, stormwater management, and access drives are designed to conform to the natural features of the land, thereby minimizing the impact on wetlands and preserving the natural landscape to the maximum extent possible.

6.2 OFFICE PARK PLANNED UNIT DEVELOPMENT (OP-PUD)

The purpose of the OP Zone is to provide substantial areas for integrated development of professional offices in a park- or campus-like setting which are of the highest quality, are well designed and maintained and are compatible with their natural surroundings. A Planned Unit Development (PUD) is a development located on one lot consisting of one or more buildings and with driveways or open areas to be owned and maintained in common. This project will be developed as part of an OP-PUD (the previously approved Portland Technology Park).

A condominium association will govern all areas of the Portland Technology Park, including the main access roadway and associated roadway infrastructure, as well as maintain all parking areas, driveways and stormwater management outside of the individual buildings, which will be maintained by their individual owners. Additional information regarding the condominium development was provided in support of the original application, including the condominium documents that will govern the development.

6.3 DIMENSIONAL REQUIREMENTS

Per Sections 14-230.14 and 14-230.15, the dimensional requirements for the Technology Park as a whole are outlined in Table 6-1, below:

Table 6-1: O-P Zone Dimensional Requirements

	REQUIRED	PROVIDED
Front Yard Setback	50 FT	123 FT
Side Yard Setback	25 FT	87 FT
Rear Yard Setback	50 FT	299 FT
Pavement Setback	15 FT	15 FT
Impervious Surface Ratio	60% MAX	27%
Lot Size	1.5 ACRES MIN	26 ACRES
Street Frontage	100 FT MIN	> 1,000 FT
Lot Width	150 FT MIN	270 FT
Parking Spaces	2.5/1000 SF or 303	445* (includes trailhead parking)

*The parking ratio and total space count in excess of the current zoning was accepted with the original approval, pending individual lots provide a parking analysis to prove need. Please refer to Section 10 of this application for additional parking information specific to LCE 4 and Patrons Oxford Insurance.

The total building area, accounting for the 1,000 square foot reduction of area for Unit 4 on LCE 4 ,is now 121,000 square feet.

The individual Limited Common Elements are located within the overall Technology Park setbacks defined above. There are no dimensional requirements for the individual LCEs.

7. EASEMENTS AND OTHER BURDENS

The revised Subdivision Plat being submitted concurrently with this application shows easements located within the Technology Park. There are no existing or proposed easements or burdens associated with LCE 4.

9. CONSTRUCTION MANAGEMENT PLAN

The proposed LCE 4 development will be constructed in a single phase. On-site work for this project is anticipated to begin in January of 2016 and is estimated to last approximately ten months (completion to be October of 2016). All erosion and sediment control measures will be installed prior to any soil disturbance. The project contractor will be required to submit a detailed construction management plan prior to the start of construction.

13. CONSISTENCY WITH MASTER PLAN

Narrative describing consistency with the City's Master Plan for the Portland Technology Park was provided as part of the original application; refer to the original application dated November 5, 2010, for additional information. The development of LCE 4 will follow the approved Design Guidelines for the Technology Park as outlined later in this report.

14. UTILITY CAPACITY TO SERVE

Utilities within the Portland Technology Park roadway include an eight inch sanitary sewer main, 12-inch water main, natural gas main (with a planned connection to Westbrook Street), underground electrical duct bank with below grade vaults, and underground telecommunications duct bank with below grade vaults. As part of this project, the roadway will be extended to LCE 4, and these utilities will extended and connected to the proposed development.

The Patrons-Oxford office building will be the first business in the park. The proposed building footprint is smaller than what was previously proposed and approved for the unit in LCE 4, and the utility supply needs are less than what was previously anticipated and accepted by Portland Water District and the Department of Public Services. Ability to Serve" letters for the Portland Technology Park were provided as part of the original application. Copies can be provided again if required.

The anticipated demand for just Unit 4 based on the approved LCE4 unit size of 20,000 square feet was 1,600 GPD for sewer (equal to 4 employees per 1,000 square foot of building space, and 20 GPD per employee) and 1,760 GPD for domestic water (equal to 110% of sewer demand), with additional water service required for fire suppression. This was calculated as part of an overall Technology Park demand of 28,960 GPD for sewer and 31,856 GPD for domestic water, which accounted for the total building area anticipated for the Technology Park and an assumed laboratory space. The proposed office use for LCE4 Unit 4 will not require any laboratory space.

Based on the new building area of 19,000 square feet, the demand will be 1,520 GPD for sewer and 1,672 GPD for water. With a smaller building in a location similar to previously proposed, fire suppression needs have not increased. As the utility demands are less than proposed and approved under the original approval, we do not anticipate the need to re-verify capacity to serve with Portland Water District or Department of Public Services for this project.

15. SOLID WASTE

15.1 COMMERCIAL SOLID WASTE

The Patrons-Oxford Insurance Company will contract with a waste management service to collect and remove waste and recyclables. All materials will be transported and disposed of by a licensed processing or disposal facility in accordance with applicable laws and regulations. Based on square footage of building area, intended use, and published solid waste generation rates, total waste generated from the developed site has been estimated at 15.1 tons of general solid waste per year and 9.6 tons of recycles per year.

Correspondence with ecomaine confirming they have capacity to accept solid waste from the Portland Technology Park was provided as part of the original application; refer to the original application dated May 11, 2011, for additional information. The ecomaine solid waste facility would have more than adequate capacity to handle waste from the Patrons-Oxford office building, as it is only the first development in the Technology Park; however, waste management contracts have not yet been completed, and Patrons-Oxford may select a different option. They will select a solid waste management option that provides adequate services for their facility.

15.2 CONSTRUCTION & LAND CLEARING DEBRIS

As with any construction project, the proposed construction will generate construction, demolition, and land-clearing debris. The contractor(s) for the construction work will be fully responsible for handling all waste generated by the project and for managing and disposing of it in accordance with Maine Solid Waste Management Regulations - 06-096 CMR 400-409. The contractor(s) will be bound by contract to dispose of all materials in full accordance with applicable Maine regulations and approval of the City of Portland. All efforts will be made during construction to minimize waste and to recycle.

Construction debris will be transported to a waste management facility licensed to accept the waste materials. Trees cleared will either be harvested and sold, ground down to create erosion control mix for onsite applications, or disposed of at an approved facility. Stumps will be disposed of at an approved facility and no stumps, refuse vegetation or other debris created by clearing or construction operations will be disposed of onsite.

Based on square footage of building area and industry standards for waste generation rates, total construction and land clearing debris to be generated from the proposed project has been estimated at 19 tons and 528 cubic yards, respectively.

15.3 SPECIAL & HAZARDOUS WASTE

The proposed development will not produce any special or hazardous waste.

15.4 FINDINGS

Adequate provisions for solid waste disposal have been made. General solid waste, construction, demolition, and land-clearing debris will be managed in full accordance with all applicable laws and will not cause a deleterious effect on the environment.

16. SUMMARY OF FIRE CODES

A Fire Plan (FP-01) was created for the Technology Park as part of the initial permitting effort. This plan has been updated to include the proposed Limited Common Element (LCE) 4 Development. In addition, a Life Safety Plan and Code Summary (G-002) has been created for the proposed Unit 4 building. Both of these plans are attached and address the items in the Portland Fire Department Site Review Checklist as follows:

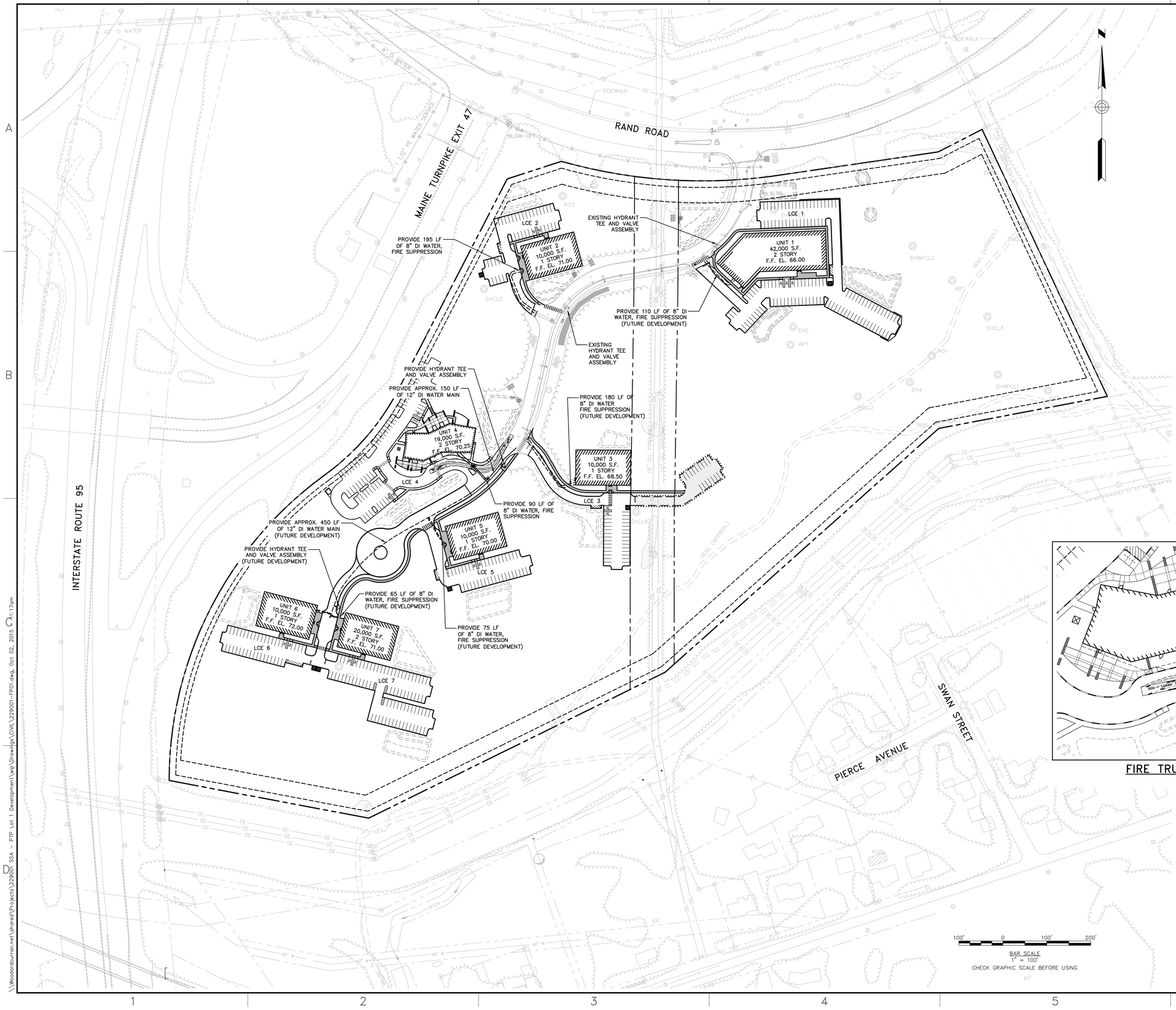
- Name, address, telephone number of applicant
    - This information is provided on sheet FP-01. It now includes both the City of Portland as the contact for the Technology Park and Patrons Oxford Insurance as the contact for LCE 4.
- Name, address, telephone number of architect
    - This information is provided on sheet FP-01.
- Proposed uses of any structures [NFPA and IBC classification]
    - General discussion for the Technology Park is provided on FP-01. Specific LCE 4 structure uses are defined on sheet G-002. Unit 4 will be classified as Mixed Use and Occupancy, Business, B-2, and Assembly, A-3.
- Square footage of all structures [total and per story].
    - This information is provided on sheet FP-01. Areas are conceptual for LCEs 1, 2, 3, 5, 6, and 7. LCE 4 information is as designed.
- Elevations of all structures
    - This information is provided on sheet FP-01. Elevations are conceptual for LCEs 1, 2, 3, 5, 6, and 7. LCE 4 information is as designed.
- Proposed fire protection of all structures
    - All structures shall be sprinkled as noted on both sheet FP-01 and G-002.
- Hydrant locations
    - Existing and proposed hydrant locations are shown on sheet FP-01. One hydrant will be constructed as part of this project.
- Water main size and location
    - The water main is 12 inches in diameter and is shown on sheet FP-01.
- Access to all structures [min. 2 sides]
    - Sheet FP-01 shows the location of all proposed future Technology Park buildings, with access to at least two sides. In addition, the plan shows fire truck access verification for the current proposed LCE 4 development. The fire truck turning template shows that the truck will drive over the curb on the driveway island. This curb will be sloped, granite, mountable curb, ensuring that fire truck access will be possible.
- A code summary shall be included referencing NFPA 1 and all fire department technical standards.
    - The development of LCE 4 will be in conformance with all NFPA and City of Portland Fire Department Standards.
        - Sheet G-002 provides a code review for the proposed LCE 4 building. Building fire protection will be provided by a sprinkler system and all materials will provide adequate fire resistance.

- Sheet FP-01 shows the Technology Park's compliance with all Public Safety Technical Standards for fire hydrants and site access. No hazardous materials will be stored on the site. Blasting or open burning will not be required for construction.

The full plan set, the Fire Plan FP-01, and the Code Review Plan G-002 have been provided to the Fire Department Reviewer along with a cover letter including the above information.

16.1 **ATTACHMENTS**

- Fire Plan
- Life Safety and Code Summary Plan



APPLICANT:
PORTLAND TECHNOLOGY PARK – SUBDIVISION AMENDMENT
CITY OF PORTLAND ECONOMIC DEVELOPMENT DIVISION
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NRH@PORTLANDMAINE.GOV

LCE 4 – LEVEL III SITE PLAN
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PHONE: (800)442-6071

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MAINE LICENSED ARCHITECT
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SIMONSARCHITECTS.COM

ENGINEER:
WOODARD & CURRAN
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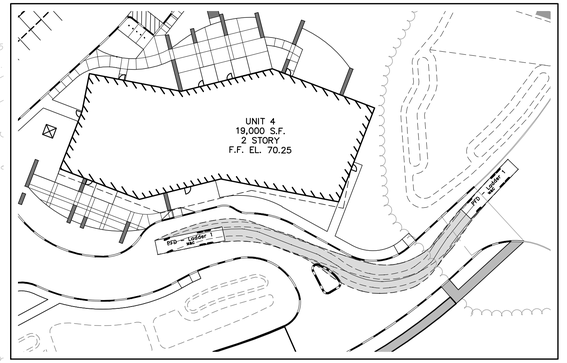
PROPOSED OCCUPANCY TYPE: "BUSINESS USE"

PROPOSED BUILDING TYPE : T.B.D.

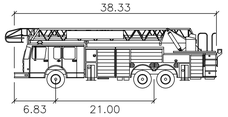
SQUARE FOOTAGE OF STRUCTURES			
BUILDING NO.	STORY 1 S.F.	STORY 2 S.F.	TOTAL S.F.
1	21,000 S.F.	21,000 S.F.	42,000 S.F.
2	10,000 S.F.	–	10,000 S.F.
3	10,000 S.F.	–	10,000 S.F.
4	9,500 S.F.	9,500 S.F.	19,000 S.F.
5	10,000 S.F.	–	10,000 S.F.
6	10,000 S.F.	–	10,000 S.F.
7	10,000 S.F.	10,000 S.F.	20,000 S.F.

ELEVATION OF STRUCTURES		
BUILDING NO.	F.F. EL.	NO. OF STORIES
1	66.00	2
2	71.00	1
3	68.50	1
4	70.25	2
5	70.00	1
6	72.00	1
7	71.00	2

PROPOSED FIRE PROTECTION:
ALL STRUCTURES SHALL BE SPRINKLERED



FIRE TRUCK TURNING TEMPLATE
SCALE: 1" = 40'



PFD – Ladder 1

Width	: 8.00'
Track	: 8.00'
Lock to Lock Time	: 6.0'
Steering Angle	: 28.4

100' 0 100' 200'
BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

CITY REVIEW SET
NOT FOR CONSTRUCTION

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COMMITMENT & INTEGRITY DRIVE RESULTS

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STATE OF MAINE DAVID A. SENUS 10791 REGISTERED PROFESSIONAL ENGINEER
10/10/2011

REV.	DESCRIPTION	DATE
DESIGNED BY:	MAC	CHECKED BY: DAS
DRAWN BY:	JDE	22900I-FP01.dwg

FIRE PLAN

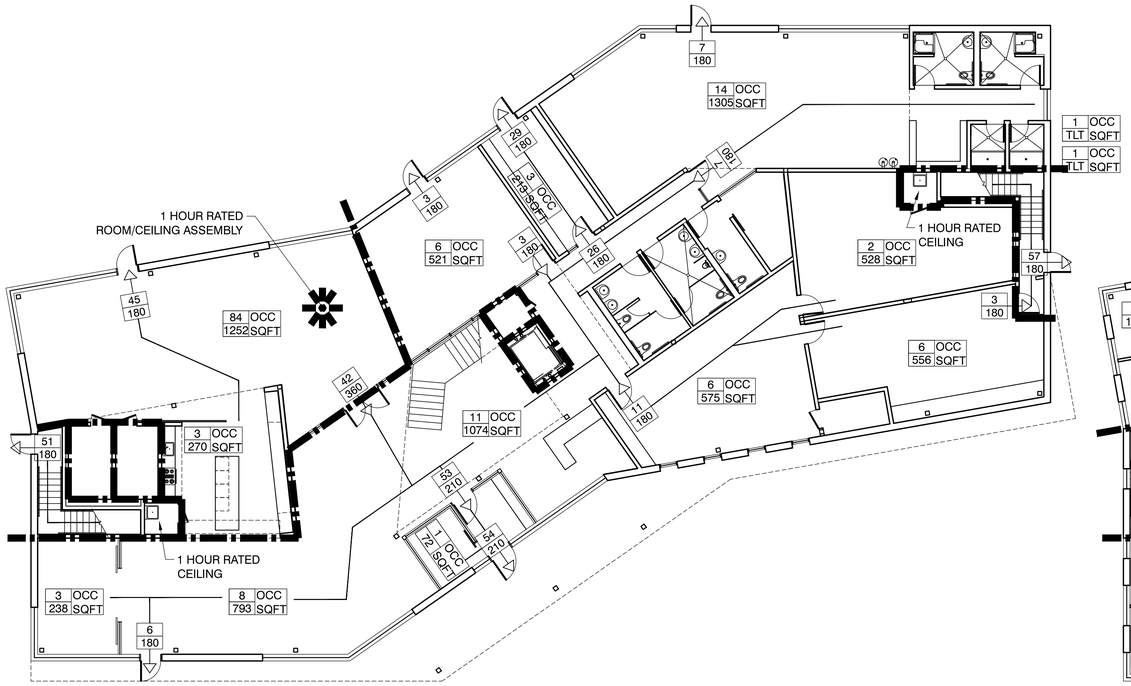
CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE

PORTLAND TECHNOLOGY PARK

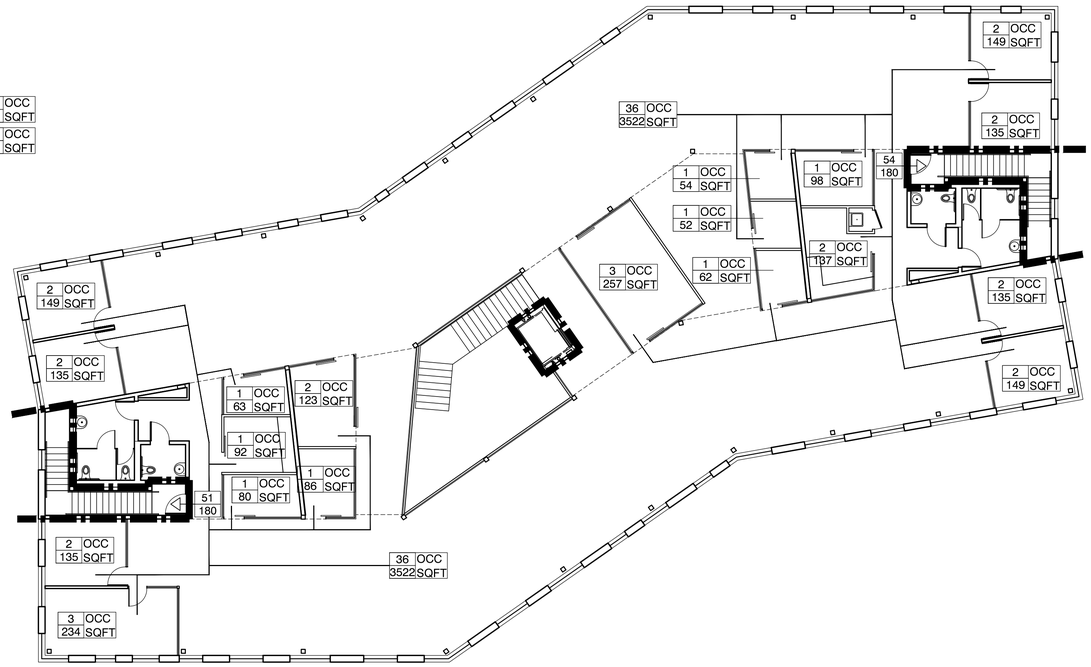
JOB NO.: 203848.63
DATE: DECEMBER, 2011
SCALE: 1"=100'
SHEET: 1 OF 1

FP-01

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1 FIRST FLOOR CODE PLAN
SCALE: 3/32" = 1'-0"



2 SECOND FLOOR CODE PLAN
SCALE: 3/32" = 1'-0"

FIRE RATINGS LEGEND

1–HOUR FIRE RATED SEPARATION WITH 1 HOUR OPENINGS

scott simons architects
designed for human potential

75 York Street
Portland, Maine 04101
phone 207 772 4656
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CODE SUMMARY

date: Friday, July 23, 2015
project: Patrons Oxford Insurance, Patrons Oxford, 2015-0100
Subject: Schematic Design Code Review
prepared by: Philip Chaney PC Scott Simons Architects SSA

APPLICABLE CODES

Maine Uniform Building and Energy Code "MUBEC"
Consists of the following applicable codes:

2009 International Building Code (IBC)
2009 International Energy Conservation Code (IECC)
2007 ASHRAE 62.1 (Ventilation for Acceptable Indoor Air Quality)
2007 ASHRAE90.1 - (Energy Standard for Buildings except Low-Rise Residential Buildings) editions without addenda.
E-1465-2006, Standard Practice for Radon Control Options for the Design and Construction of New Low-Rise Residential Buildings.
Maine State Internal Plumbing Code based on the 2009 Uniform Pluming Code
State of Maine Subsurface Wastewater Disposal Rules Version dated: Jan 18, 2011
2011 National Electrical Code (NEC)

Fire/ Life Safety

NFPA Life Safety Code as adopted by the State of Maine
Including but not limited to:

2009 NFPA 101: Life Safety Code
2007 NFPA 13: Installation of Sprinkler Systems, [2010 Edition through Equivalency]

Accessibility

2010 ADA Standards for Accessible Design

NOTE: All Codes shall include changes/amendments by the State of Maine

OCCUPANCY CLASSIFICATION

Mixed Use and Occupancy
Business, B-2
Assembly, A-3 (IBC Sec 302, 303, 304) (NFPA)

AUTOMATIC SUPRESSION SYSTEM

Fully Coverage (NFPA 13)

GENERAL BUILDING INFORMATION AND

ALLOWABLE BUILDING HEIGHTS AND AREA

(IBC Chapter 5, Table 503) (NFPA)

Building Height (To mid-height of the roof) – 2 Stories

Allowable Building Area

	Occupancy (per IBC chapter 3)	Con. Type (per IBC chapter 6)	Allowable Area (IBC Table 503 modified per IBC 506)	Actual Area
Lower Floor Level				
	B-2	VB	9,000 Tabular, per floor 14,400 Allowable	9,481 sf
Upper Floor Level				
	B-2	VB	9,000 Tabular, per floor 14,400 Allowable	10,372 sf
Total				19,853 sf

Building Area Modifications

(IBC Sec 506.1, 506.2, 506.3)

60% Total increase taken

General Equation:
A(a) = A(t) + [A(t) x I(f)] + [A(t) x I(s)]

Where :

A(a)= 9,000 sf
A(t)=
I(f)=
I(s)=

Frontage Increase (IBC 506.2)

I(f) of 60% taken

450' Building Perimeter total
378' Building Perimeter >30' clear

I(f) =[F/P – 0.25]W/30

I(f) = [378/443 - .25]30/30 = .59

Where:

I(f)= Area increase due to frontage
F= Building perimeter fronting public way or open space
P = Total building perimeter
W= Width of public way or open space

Automatic Sprinkler Increase (IBC 506.3)

Not taken. Area increase not taken, Approved automatic sprinkler system used to substitute for 1-hour fire resistance rated construction and reflected on Fire Resistive Rating Table below.

TYPES OF CONSTRUCTION

(IBC Table 601, Sec 602) (NFPA 220)

Type VB

FIRE RESISTIVE RATINGS

(IBC Table 601) (NFPA Table A.8.2.1.2)

	Type VB (with sprinklers)
Structural Frame	0
Bearing Walls, Exterior	0
Bearing Walls, Interior	0
Non-Bearing Walls and Partitions, Exterior	0
Non-Bearing Walls and Partitions, Interior	0
Floor Construction and Secondary Members	0
Roof Construction and Secondary Members	0

OCCUPANCY LOAD by Table 1004.1.1 (IBC)

Business Areas - 100 Gross Sq ft per Occupant	15,700 sf	÷ 100sf per occupant =	157occupants
Accessory Storage Areas, Mechanical Rooms	2,901 sf	÷ 300 sf per occupant =	10 occupants
Assembly Without fixed seats, Unconcentrated	1,252 sf	÷ 15 sf per occupant =	84 occupants
			251 total occupants

OCCUPANCY LOAD by Table 7.3.1.2 (NFPA)

Business Use	15,700 sf	÷ 100 sf per occupant =	157 occupants
Storage Use in other than storage ÷ mercantile use	2,901 sf	÷ 500 sf per occupant =	6 occupants
Assembly, less concentrated, w/o fixed seats	1,252 sf	÷ 15 sf per occupant =	84 occupants
			247 total occupants

scott simons architects
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PROJECT NAME:

PATRONS OXFORD OFFICES

PORTLAND TECHNOLOGY PARK
RAND ROAD, PORTLAND, ME

SEAL:

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REVISION:

1	DATE
2	DATE
3	DATE
4	DATE
5	DATE
6	DATE

DATE OF ISSUE:	September 21, 2015
PROJECT NUMBER:	2105-0100 Patrons Oxford
STATUS:	100% Design Development

LIFESAFETY PLAN + CODE SUMMARY

G002

18. HVAC & MANUFACTURING EQUIPMENT VERIFICATION

All HVAC equipment utilized within the building will meet state and federal emissions requirements, and will meet the standards as set in the Portland Technology Park Design Guidelines. Additional information can be provided as required. HVAC design is currently in progress.

There is no manufacturing equipment proposed as part of the development of LCE 4.

COMMITMENT & INTEGRITY
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November 3, 2015

Jean Fraser, Planner
City of Portland Planning Office
389 Congress Street
Portland, ME 04101

Re: Portland Technology Park LCE 4
Level III Site Plan & Subdivision Amendment – Additional Information

Dear Jean:

On behalf of the Patrons-Oxford Insurance Company and the City of Portland, we are submitting the enclosed additional information for the Planning Board review of the Level III Site Plan Application and Subdivision Amendment for the Portland Technology Park Limited Common Element (LCE) 4 project.

Geotechnical Report

The geotechnical report has been finalized, and is enclosed. The structural and site design components impacted by the geotechnical conditions of the site are being finalized based on this report.

Stormwater Management

We have received the preliminary comments (via email October 27, 2015) from Jim Seymour, and will be meeting with you and Jim on November 4, 2015. Following this meeting, we will provide a response to his comments for inclusion with the Planning Board memo.

Signage

Patrons Oxford is currently undergoing a rebranding effort, and will be changing their logo prior to the project. Draft sign concepts and a description of signage intent will be provided under separate cover by the architect.

Updated Plat

The plat has been updated to show the buildings and some of the site features, reflecting the level of information presented on the originally approved plat. An updated plat is enclosed. The Technology Park Site Plan (C-02) and the LCE 4 Site Plan (C-03) have both been updated to show the correct subdivision boundaries, and are enclosed.

Design Review

We have received your design review comments (via email November 2, 2015), and are currently working to address these comments. Responses will be provided under separate cover by the architect.

Additional Information

We understand that there was concern with the amount of additional pavement beyond the parking spaces at the northern end of the parking lot. This pavement area has been reduced. Additional cleared space has been kept for snow storage; however the clearing line has been pulled in by about 10 feet.

The project is currently being reviewed by the Maine Department of Environmental Protection (DEP) for a Minor Revision to the Natural Resource Protection Act permit and a Minor Amendment to the Site Location of Development Permit. We received some comments for the Maine DEP that resulted in minor changes to details. Updated detail sheets C-11 and C-12 are enclosed. A detail for an emergency spillway has been added to sheet C-12 and the details for gravel wetlands and underdrained soil filters on sheet C-11 have been updated to reference the emergency spillway detail. No other design changes have resulted from the comments received from the Maine DEP.

The project is also being reviewed by the Army Corps of Engineers for a revision to the previously issued permit. Comments received so far are related primarily to clearing and construction procedures that will be evaluated for impacts to threatened species of bats. It is not anticipated that any design changes will result from these comments.

If you have any additional comments or questions, please do not hesitate to reach out to me. Thank you for your help in coordinating the review of this project.

Sincerely,

WOODARD & CURRAN

Lauren Swett

Lauren Swett, P.E.
Project Engineer

Enclosures: Geotechnical Report
Updated Plat
Updated Plan Sheets C-02, C-03, C-11, and C-12

PN: 229001

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Environmental Consulting • Materials Testing Services

06 October 2015

Mark Pettingill, CIC, President and CEO
Patrons Oxford Insurance Company
P.O. Box 1960
Auburn, ME 04210-1960

Subject: Geotechnical Engineering Services
Proposed Patrons Oxford Insurance Company Office Building
Portland, Maine
RWG&A Project No. 1518-002

Dear Mr. Pettingill:

R. W. Gillespie & Associates, Inc., (RWG&A) is pleased to provide this geotechnical evaluation in connection with Patrons Oxford Insurance Company's two-story office building to be built on Lot 4 at the west side of the access drive in Portland Technology Park in Portland, Maine. The purpose of this evaluation was to obtain information regarding subsurface conditions and soil properties on which to base geotechnical recommendations for design and construction of building foundations, ground floor slabs, pavement sections, site improvements, and determine seismic site characteristics. The services were performed in general accordance with RWG&A Proposal No. P-9075.GI dated 25 June 2015, and Modification No. 1 to Geotechnical Engineering Services dated 09 September 2015.

The primary geotechnical considerations for design and construction of the building is compressibility of silty clay deposits under additional loads. With appropriate site preparation including use of low density, controlled low strength material to reduce building settlements, the proposed building may be supported on spread and continuous footings with slab-on-grade ground floors. Perimeter foundation drainage is recommended.

Results of our geotechnical evaluations and engineering recommendations are provided in the attached report. RWG&A has enjoyed working with Patrons Oxford Insurance Company, Scott Simons Architects, LLC, and Becker Structural Engineers, Inc. on this project. Please contact us if you have any questions or if we may be of further service.

Sincerely,
R. W. GILLESPIE & ASSOCIATES, INC.

Erik J. Wiberg, P.E.
Chief Geotechnical Engineer

Charles R. Nickerson, P.E.
Principal Reviewer

EJW:md
In duplicate

Copy: Ryan E. Kanteres, AIA, Scott Simons Architects, LLC (via email)
Christopher G. Williams, P.E., S.E., Becker Structural Engineers, Inc. (via email)

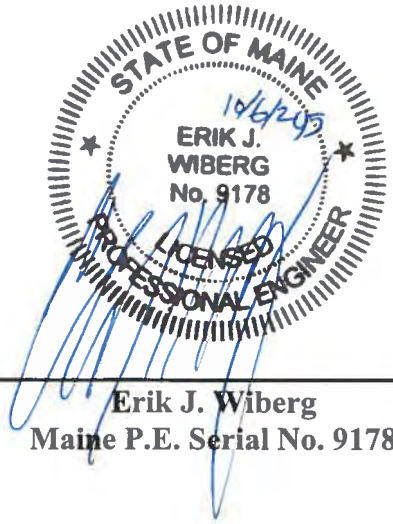
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R.W. Gillespie & Associates, Inc.

Report
of
GEOTECHNICAL ENGINEERING SERVICES
for
PROPOSED PATRONS OXFORD INSURANCE COMPANY OFFICE BUILDING
PORTLAND, MAINE

Prepared
for
PATRONS OXFORD INSURANCE COMPANY
AUBURN, MAINE

Prepared
by
R. W. GILLESPIE & ASSOCIATES, INC.
SACO, MAINE



Erik J. Wiberg
Maine P.E. Serial No. 9178

RWG&A Project No. 1518-002

06 October 2015

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1.0 INTRODUCTION

1.01 Background

Patrons Oxford Insurance Company proposes to construct an office building and associated parking lots and drive way on Lot 4 of the Portland Technology Park in Portland, Maine. The Portland Technology Park is located off of Rand Road near its intersection with the Interstate 95 Exit 47 interchange. The approximate site location is shown on Figure 1, *Locus Map*.

The overall plan dimensions of the proposed office building are about 180 feet by 70 feet with the building's geometry containing several skews. Employee and visitor parking would be provided west of the building with a two-bay handicap parking at the east side (front) of the building. Finished ground floor level will be between elevation 70.0 and 70.25 feet, which ranges from 2 to 3 feet above current ground surface. Proposed site grades in developed areas outside the building range from about elevation 69.9 feet adjacent to the building to 68 feet.

R.W. Gillespie & Associates, Inc.'s (RWG&A's) understanding of the proposed project is based on site visits, communications with Scott Simons Architects, LLC (SSA) and Becker Structural Engineers, Inc., (BSE) and review of the following documents provided to RWG&A:

- Untitled plan showing proposed site layout with requested boring locations dated 23 June 2015 (A- SP01-BORING LOCATIONS 11x17.pdf).

- Letter from BSE to SSA dated 13 July 2015 providing a narrative of structural engineering concepts for the building.

- Plan set prepared by Scott Simons Architects, Inc. titled *Patrons Oxford Offices, Patrons Oxford Insurance, Portland Technology Park, Rand Road, Portland, Maine, 04102*, marked *100% Design Development, date of issued: 09.21.1015.*

- Plan set prepared by Woodard & Curran, Inc. titled *City of Portland Economic Development Office, Portland, Maine & Patrons Oxford Insurance Company, Portland Technology Park Update & LCE 4 Development*, marked *Permitting Plans*, and dated September 2015

1.02 Scope of Services

This geotechnical evaluation was performed to obtain information regarding subsurface soil conditions and properties on which to base recommendations suitable for design of foundations and ground floors, and to determine seismic site characteristics. Services were performed in general accordance with RWG&A Proposal No. P-9075GI dated 25 June 2015. Refer to Appendix A for use and limitations of this report. As performed, RWG&A's scope of services included the following items:

- Reviewed project information and readily available published geologic mapping.

- Prepared a subsurface exploration and sampling program to obtain soil, bedrock, and groundwater information for use in geotechnical evaluations.

- Marked test boring locations in the field and contacted DigSafe and OK-TO-DIG registered utility entities to locate public utilities.

- Arranged to have the soil borings made by a drilling contractor as a subcontractor to RWG&A. Provided technical monitoring of the exploration activities so that depth, location, and sampling methods could be modified in response to subsurface conditions encountered.

- Arranged to have a cross-hole geophysical shear wave velocity test performed to evaluate shear wave velocity in subsurface materials and determine seismic site class in accordance with building code requirements.

- Performed laboratory tests on soil samples recovered from the subsurface explorations to aid in soil description, and for determination of engineering properties needed for foundation design and site development analyses.

- Conducted engineering analyses of the geotechnical aspects of foundation design and slope stability. The engineering analyses included settlement and its control, allowable foundation loads, evaluation of seismic parameters, foundation drainage, and earthwork construction considerations.

- Prepared this report of geotechnical evaluation presenting RWG&A's findings, conclusions, and recommendations.

Elevations used in this report were obtained or interpolated from the above referenced background documents. It is understood the elevations presented on the plan are in units of feet relative to the North American Vertical Datum of 1988 (NAVD88).

2.0 SUBSURFACE EXPLORATION

The subsurface exploration program consisted of twelve test borings, designated B-1 through B-10, and GB-101 and GB-102. Test borings B-1 through B-10 were drilled on 20 and 21 July 2015 by Northern Test Boring, Inc. of Gorham, Maine for soil sampling purposes. Additional test borings GB-101 and GB-102 were drilled on 17 and 18 September 2015 by Great Works Pump & Test Boring, Inc. of Rollinsford, New Hampshire for use in geophysical testing. The approximate locations of the explorations are shown on Figure 2, *Exploration Location Plan*.

Boring locations were measured in the field by tape survey methods using features shown on Google Earth aerial imagery and GPS coordinates of planned boring locations provided by Scott Simons Architects, LLC. Ground surface elevations on the boring logs were interpolated from topographic survey information provided on the background documents. The boring locations and elevations should be considered accurate only to the degree implied by the methods used to determine them. RWG&A marked the as-drilled boring locations with stakes for survey by the project surveyor.

Exploration activities were coordinated and monitored by an RWG&A representative who prepared the exploration logs. The soils were described in general accordance with *ASTM D2488*,

Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Logs of the explorations are included in Appendix B. Stratification lines shown on the exploration logs represent the estimated boundaries between the different soil types encountered and approximate refusal depths; the soil transitions and refusal depths will be more gradual and vary over short distances. Subsurface information should only be considered representative of subsurface conditions encountered within the vertical reach of the explorations on the date the explorations were made.

In general, borings advanced to depths less than about 27 feet below ground surface were advanced with solid-stem and hollow-stem augers, and deeper borings were advanced using cased hole with rotary wash drilling methods. Split-barrel sampling with standard penetration testing (*ASTM D1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils*) was performed at about 5-foot intervals in Borings B-1 through B-10. Field vane tests (*ASTM D2573, Standard Test Method for Field Vane Shear Test in Cohesive Soil*) and/or thin-walled tube sampling (*ASTM D1587, Standard Practice for Thin-Walled Tube Geotechnical Sampling of Soils*) were performed in medium stiff to soft cohesive soils encountered in borings B-4, B-5, B-8, B-9, and GB-102.

Borings were advanced 12 to 72 feet below local ground surface. Refusal to advancement of a roller cone drill bit was encountered at depths of 56 to 62 feet in borings B-8, B-9, GB-101, and GB-102. Rock drilling was not performed to determine the nature of refusal surfaces except at borings GB-101 and GB-102. Refusal in borings B-8 and B-9 might have occurred on cobbles, boulders, or on bedrock.

Three-inch diameter, solid, Schedule 40 PVC casing set in cement-bentonite grout was installed to a depth of about 72 feet below local ground surface in the completed boreholes for GB-101 and GB-102. The casings were installed to conduct cross-hole geophysical shear wave velocity tests. The cross-hole tests were performed by Hager-Richter Geoscience, Inc., of Salem, New Hampshire, on 24 and 25 September 2015.

2010 Explorations: Maine Test Borings, Inc. conducted three soil borings near the proposed building site in August 2010. The approximate locations are shown on Figure 2 and exploration logs are provided in Appendix C for informational purposes only. RWG&A is unable to ensure the accuracy of completeness of the information provided, either because doing so is impossible, or because of errors or emissions others may have committed when assembling the information. RWG&A does not take accept responsibility for use of, interpretation of, or accuracy of information provided by others.

3.0 LABORATORY TESTING

Laboratory testing was performed to assist in soil description and estimation of engineering properties of encountered soils. The laboratory testing program included 9 moisture content determinations, 2 grain-size analyses, 2 one-dimensional consolidation tests, 2 sets of undrained shear strength using Geonor vane apparatus, and 1 plastic Atterberg limits test. The tests were performed in general accordance with the following methods and procedures:

- ASTM D2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

- ASTM D422, Standard Test Method for Particle-Size Analyses of Soils
- ASTM D2435, Standard Test Method for One-Dimensional Consolidation Properties of Soils
- ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

The laboratory Geonor vane shear tests were performed in accordance with the manufacturer's recommended procedures. Moisture content test results are presented on the soil boring logs. Results of the other laboratory tests are presented in Appendix D, *Laboratory Test Results*. All tests were conducted at the RWG&A soil and materials testing laboratory in Saco, Maine, which is accredited by the American Association of State Highway and Transportation Officials (AASHTO) for the tests performed.

4.0 SUBSURFACE CONDITIONS

4.01 Subsurface Soils

The subsurface explorations encountered consisted of five primary soil units identified herein as topsoil with organic matter, fill, silty sand, silty clay (glaciomarine), and silty sand with gravel (glacial till). Some of the soil units were locally absent. Logs of the explorations should be referenced for information at specific locations and depths. Subsurface soils and encountered thicknesses are summarized below.

Description	Encountered Thickness (feet)	Generalized Description
Topsoil and Organic Matter	0.25 to 0.6	Occurs as bark mulch fill at boring B-9.
Fill	2.8 to 4	Encountered at borings B-2 and B-9. Sand with silt to silty sand. Boring B-2 drilled within stormwater management basin and B-9 drilled through berm.
Silty Sand	1.4 to 11.2+	Generally very loose to medium dense, moist to wet, fine sand with some silt. Occurs locally with interbedded silty clay to sandy silt layers.
Silty Clay	36 to 42.5*	Silty clay with trace to few sand, moist to wet. Consistency ranged from stiff to very soft in the upper 5 to 10 feet of the deposits, and became very soft to soft with increasing depth.
Silty sand with gravel	10 to 18	Silty fine to coarse sand with gravel, loose to medium dense, wet.
*Where penetrated.		

4.02 Groundwater

Free water was observed at depths ranging from about 4 to 8 feet below ground surface. Water levels observed were influenced by the exploration methods (e.g., slow groundwater response due to low soil permeability) and are not considered representative of stabilized groundwater levels. Groundwater levels at the site will fluctuate due to season, temperature, rainfall, nearby underground utilities, and construction activity in the area; therefore, water levels during and

following construction will vary from those observed in the explorations. Seasonal high groundwater would occur at or near ground surface.

4.03 Bedrock

The drill rigs used roller cone drill bits to drill to refusal surfaces at borings B-8 and B-9, and to drill about 15 feet into refusal surfaces at GB-101 and GB-102; refusal surfaces were interpreted to be on bedrock at GB-101, and GB-102. Refusal to hydraulic pushing of a rod probe occurred at a depth of 51 feet in boring B-4. However, the refusal surfaces at borings B-4, B-8, and B-9 might have been on dense sand or boulder(s), or on bedrock. Maine Geologic Survey mapping indicates bedrock underlying the site is metamorphosed slate and shale.

4.04 Crosshole Seismic Survey

Hager-Richter Geoscience, Inc., (Hager-Richter) performed crosshole seismic testing in a two borehole array comprised of casing installed in completed boreholes GB-101 and GB-102. The purpose of the testing was to evaluate the shear wave velocity of materials in the upper 100 feet and assess Site Class for seismic design in accordance with 2009 International Building Code®. The average value of the velocity of shear waves determined for the depth interval of 0 to 100 feet is approximately 800 feet per second, corresponding to Site Class D; see Appendix E for report of Crosshole Seismic Testing.

5.0 ENGINEERING EVALUATIONS

5.01 General

Engineering evaluations for this project are based on the subsurface explorations, laboratory testing data, and preliminary design information available to RWG&A when this report was prepared. This report addresses settlement with finished ground floor level at or below elevation 70.25 feet.

Actual ground surface elevations can vary from elevations developed by aerial and similar approximate topographic mapping methods. Evaluation of settlement for fills and excavations is sensitive to fill thicknesses and/or excavation depths. The engineering evaluations that follow should be reviewed by RWG&A to confirm their continued applicability if existing and proposed site grades, finished floor elevations, structural loads and settlement tolerances, site layout, current or constructed ground surface elevations will vary from those used in RWG&A's evaluations.

5.02 Proposed Construction

The proposed construction consists of a two-story office building with no below-grade spaces except those needed for an elevator pit. Structural framing will be comprised mostly of engineered wood and timber elements. A combination timber and steel framing will be used to resist lateral forces. Becker Structural Engineers, Inc. indicated that column loads would range from 10 to 60 kips with a corresponding average distributed structural load over the building plan area of about 150 pounds per square foot excluding ground floor slabs. Recommended tolerable total and differential settlements provided by the project structural engineer are 1 inch.

Two parking fields are proposed adjacent to the west property boundary between the building and off ramp for Interstate 95 Exit 47. Handicap parking stalls and driveway off of the technology park road are proposed at the east side of the office building.

Existing ground at the site is relatively level with surface elevations ranging from about 67 to 68 feet (NAVD88) within the planned building area and from about 68 to 69 feet (NAVD88) in the planned parking lots. The building site is about 750 feet west of natural slopes that pitch down from about elevation 62 to 30 feet. The upper part of the slopes pitch down at about 2.5 units horizontal to 1 unit vertical. Locally, the slopes may pitch more or less steeper.

5.03 Foundation and Ground Floor Slabs Settlement Evaluations

The silty clay deposits beneath the site will compress under proposed fill weight and building loads. Estimated total post construction settlement for anticipated column loads bearing at 3 to 4 feet below current ground surface, an allowable bearing pressure of 1,500 pounds per square foot, and less than 1 foot in site grade raise as measured from finished floor level to current ground surface elevation would be about 1 inch. For the proposed grade changes of about 3 feet above current ground surface, the total and differential post construction settlement is estimated to be about 2 inches and about 1 to 1.5 inches, respectively, which greater than the tolerable amounts.

Alternatives to reduce post-construction settlements include:

- Use of low density, controlled low strength material (LD-CLSM)as lightweight fill below the building, which would allow the building to be supported on isolated and continuous spread footings,

- Support the building on a mat foundation and use a crawlspace under the ground floor to reduce the weight of fill, and

- Supporting the building and ground floor on slab end-bearing piles.

Reportedly pile foundations and the use of crawl space with mat foundation are uneconomical compared to the use of LD-CLSM fill. RWG&A can further evaluate and provide recommendations for the use of piles and below-grade space with mat foundations, if requested.

LD-CLSM Fill: The purpose of the LD-CLSM fill would be to compensate for additional stresses that would otherwise be placed on compressible soil deposits due to increases in site grade and building loads. Prior experience indicates unit weights of cellular material in the range of about 35 to 40 pounds per cubic foot with 28-day compressive strengths of 80 to 150 pounds per square inch are available from local concrete suppliers.

Based on a proposed finished floor level of 70.25 feet, a 1-foot thick ground floor slab base layer of compacted sand, and the structural load information provided, RWG&A recommends 3 feet of soil below the planned building area be removed and replaced with LD-CLSM, and that LD-CLSM also be used as fill above current ground surface. Estimated total LD-CLSM thickness is about 5 feet. Footings would be located within the LD-CLSM fill. For footings bearing on a minimum three feet of LD-CLSM, estimated total and differential settlements are about 1-inch.

Ground Floor Slab Base Material: Slab-on-grade ground floors are appropriate for the proposed construction. It is understood that a layer of granular material is desirable below the ground floor slab to facilitate installation of subslab utilities. Due to its lower unit weight, which would reduce post-construction settlements compared to structural fill, RWG&A recommends a layer of compacted sand be used as fill between the LD-CLSM and ground floor slab.

5.04 Global Slope Stability

Method of Analysis: Stability analyses were performed based on failure surfaces extend below the building and the slope east of the site. Analyses were performed with the computer software ReSSA® Version 3.0. Rotational arc stability calculations use the Simplified Bishop method of slices. The analyzed profile was taken through the planned building area and slope about 700 feet east of the site. In general, the lowest factors of safety for embankments on natural slopes occur where the total height, measured from the crest of the embankment to the toe of the natural slope, is greatest. The factor of safety is defined as the ratio of the resisting forces to the driving forces causing failure. When the driving and resisting forces are the same, the factor of safety is equal to 1.0, and a landslide is considered imminent. When resisting forces are greater than driving forces, the factor of safety is greater than 1.

Depending upon the type of structure and loading conditions, permanent slopes are generally considered stable if the factor of safety is greater than 1.5 for static conditions and greater than 1.0 for seismic conditions. Depending on structure and loading conditions, current engineering practice considers a factor of safety of 1.3 to be acceptable for temporary conditions such as stockpiles, or if a landslide would result in non-structural property damage only. Based on the sensitive behavior of silty clay deposits at the site, slope stability analyses used drained and undrained shear strength of the cohesive soil deposits.

It should be noted that slope instability might occur even with a calculated factor of safety greater than 1; in general, the likelihood of a landslide occurring becomes lower with increasing factors of safety. Short-term variations in factor of safety may occur due to seasonal variations such as groundwater levels, surface water levels, and soil erosion and deposition. Longer term trends may reflect the influences of weathering, geomorphologic processes, or longer term changes in ground-water conditions. Human activity such as excavating, filling, irrigation, draining, or altering vegetative cover can also influence stability. It is important to note that landslide (and slope instability in general) might not be attributable to a single causal factor.

Shear Strength Parameters: Based on the sensitive behavior of silty clay deposits of the Presumpscot Formation, it is accepted engineering practice to evaluate the stability of natural and man-made slopes using undrained shear strength of cohesive soil deposits. Although the natural slopes have likely been in more-or-less the same configuration for many years, load conditions could develop where undrained shear strengths would control stability (e.g., erosive undercutting in or near drainage channels, and during floods or earthquakes).

Undrained shear strengths were based on shear vane test results from soil borings and *Stress History and Normalized Soil Engineering Parameters* (SHANSEP) relationships for silty clay deposits. Shear strengths were adjusted to account for shear plane orientation of the modeled failure plane (i.e. low angle direct simple shear) relative to vertical oriented shear surfaces in field vane shear strength tests.

Drained analyses were also conducted for failure through the silty clay deposits under static conditions. Drained analyses were not conducted for seismic conditions since undrained shear strengths control under severe dynamic loads. An internal angle of friction angle of 35 degrees was used for silty clay deposits based on values published in *Maine Department of Conservation, Maine Geological Survey Open File No. 90-24, Stability of Natural Slopes in the Presumpscot Formation.*

Assessment of Potential Hazards from Earthquake Motions: Pseudo-static method of slices was used in seismic stability evaluations. Based on currently available subsurface information, thickness, and undrained shear strength of the silty clay deposits, the International Building Code Seismic Site Class is D. Seismic Site Class affects peak ground acceleration used in building design and ground motion evaluations.

Building code ground accelerations are based on 2 percent probability of exceedance in 50 years (return period of 2,500 years). Based on Seismic Site Classes D, an equivalent horizontal destabilizing seismic ground accelerations of 0.08 was used in the model.

Summary of Stability Evaluations: Stability analyses indicates that the factors of safety against a landslide through the building and slope for static and seismic conditions are adequate under existing and proposed conditions. A summary of the results is provided in the table below.

Description	Factor of Safety		
	Static		Seismic
	Undrained	Drained	Site Class D
Calculated Factor of Safety	>3.0	>3.0	1.2
Minimum Acceptable Factor of Safety	≥ 1.5		≥ 1.0

5.05 Pavement Evaluations

Bituminous pavement evaluations for the access drive and heavy-duty areas were based on the following traffic lane information provided by Woodard & Curran, Inc.: 3 single unit (SU30) trucks per day, 1 tractor-trailer truck per week, and 300 passenger automobiles trips per day.

Bituminous concrete pavement section evaluations were based on a 20-year serviceability life for the heavy duty and light duty sections. The terminal serviceability corresponds to 85 percent of drivers/passengers rating the pavement and ride condition as unacceptable. The actual service life will depend on variables such as actual traffic loads, surface water runoff conditions, and maintenance and performance of the asphaltic concrete layer.

Full depth frost protection of pavements would require a total pavement section of about 48 inches which would be cost prohibitive and not consistent with practice in New England. Thinner pavement sections are considered more frost-susceptible than thicker sections built with the same not-frost susceptible materials. It is typical practice in the New England region to provide partial depth frost protection for pavements with the expectation that some frost heaving will occur.

5.06 Construction Considerations

Construction Dewatering: The on-site naturally deposited soils are sensitive to disturbance when wet. To reduce disturbance of exposed subgrade soils, it will be important to divert runoff, provide positive grading to shed seepage and runoff from flat areas, and compact exposed soils to reduce rutting, ponding, and surface water infiltration. Excavations in natural soil deposits below groundwater are expected to be susceptible to sloughing due to groundwater inflow. Excavations extending more than about 1 foot below groundwater will be susceptible to sloughing and instability. RWG&A anticipates that where groundwater is encountered during construction then groundwater control can be accomplished through the use of ditches, sumps, and open pumping techniques.

LD-CLSM is buoyant and will float if exposed to inundation and/or excessive groundwater pore pressures. The Contractor, who is responsible for means and methods of construction, should anticipated the need to provide temporary groundwater water control measures such as a crushed stone drainage layer below the LD-CLSM that outlets to a free draining locations or sumps and pumps.

Use of On-site Soils: The naturally deposited subsurface soils within the anticipated depth of excavation generally consist of sand with silt, silty sand, and silty clay and are considered unsuitable for use as structural fill, or for pavement section base and subbase materials, but might be used as common fill. If the on-site soils are proposed for uses other than common fill in landscaped areas or embankment fill below pavement sections, then the soils should be stockpiled separately and tested to determine if they meet specification requirements for the intended uses.

6.0 GEOTECHNICAL RECOMMENDATIONS

The recommendations presented below are provided for use in design of proposed building foundations, ground floor slabs, and pavement sections. Foundation design and site work construction will be greatly influenced by subsurface conditions at the project site. RWG&A recommends foundation design and construction be in compliance with the requirements of all applicable ordinances, regulations, and rules. When this report was prepared, the applicable building code in Portland, Maine was the Maine Uniform Building and Energy Code which adopts 2009 International Building Code® by reference.

The following is predicated on the following construction sequence:

- Removing unsuitable materials from areas of proposed construction,
- Removing existing soil to a minimum of three feet below current ground surface below the building area, and replacing with LD-CLSM,
- Constructing foundation spread footings to bear on the LD-CLSM surface,
- Placing approximately 2 additional feet of LD-CLSM up to the design subgrade for the ground floor slab base layer,
- Placing and compacting ground floor slab base material and install underslab utilities,

- Constructing the ground floor slab.

6.01 Site Preparation

1. All topsoil, peat, organic material, debris, rubbish, frozen soils, muck, loose, or disturbed soils and other unsuitable materials should be removed from the area of new construction. Topsoil may be stockpiled outside the construction area for reuse in landscaped areas. Unsuitable materials include uncontrolled fills (i.e., fills placed without systematic densification and moisture control to an acceptable percent compaction), asphaltic pavement, and deleterious substances.

   Topsoil should be stockpiled outside of the construction area for reuse. Topsoil may be used as fill in landscaped areas but not as common fill below pavements or as fill below proposed building. On-site soils proposed for use in the construction should be stockpiled and tested for compatibility with its intended use.

2. Stripped subgrades beneath planned building and paved area and composed of granular soil should be proof-rolled with a minimum of two passes of a 10-ton roller in each of two perpendicular directions to improve the density of suitable soils. Silty clay to sandy silt subgrades should not be proof-rolled. Rolling of subgrades should be observed for areas of soil rutting or weaving indicative of unsuitable underlying materials. Unsuitable fill and/or soft, loose, and/or disturbed native soil materials should be excavated and replaced with structural fill. If high groundwater is present during subgrade preparation, the vibratory roller should be operated in the “static” mode to avoid liquefying the soil.

3. Site grading should provide positive drainage away from constructed facilities both during and after construction.

4. It should be practicable to accomplish construction dewatering within excavations by open pumping methods. Sand below groundwater might be susceptible to sloughing into excavations. Excavations deeper that 1-foot below groundwater may require the use of side trenches within or adjacent to excavations, or other dewatering methods. Surface runoff and infiltration of groundwater should be controlled so that excavation, filling, and foundation construction can be completed in-the-dry. Dewatering should be continuous until the permanent foundation drainage system is installed, and foundations are built and backfilled. A layer of crushed stone underlain with geotextile might be needed to protect subgrades from disturbance during construction.

6.02 Site Filling

5. Structural fill is recommended for use as fill below ground floor slabs and as backfill within 4 feet of footings and foundation walls only where they are located outside the limits of low-density, LD-CLSM. Structural fill should be a well-graded sand and gravel mixture meeting the following graduation requirements:

Screen or Sieve Size	Percent Passing
6 inches	100
3 inches	70 - 100
No. 4	35-70
No. 40	5-35
No. 200	0-5

(Note: Maximum particle size should be limited to 3 inches within 2 feet of foundation walls, footings, and floor slabs.)

6. In open areas, structural fill should be placed in level, uniform lifts not exceeding 9 inches in uncompacted thickness. In confined areas, within 4 feet of foundation walls, and areas where self-propelled compaction equipment should not be used based on vibration considerations, structural fill should be placed in lifts not exceeding 6 inches in uncompacted thickness and be compacted with hand-operated compaction equipment. All fill placed for footing and slab support should be structural fill compacted to at least 95 percent of the maximum dry density as determined by *ASTM Standard D 1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).*

7. Minimum compaction requirements for granular fill materials are as follows:

Location or Area	Standard Proctor Density ASTM D698	Modified Proctor Density ASTM D1557
Structures and Walkways	95%	92%
Pavements below 18 inches of Subgrade	95%	92%
Trenches	95%	92%
Lawns or Unimproved Areas	92%	90%
Building and Pavement Subgrades (Top 18 inches)	100%	95%

In-place density tests should be performed at the following frequencies to determine whether compaction requirements are met:

Location or Area	Testing Frequency One Test per Lift per
Structures and Walkways	2,000 square feet
Pavements below 18 inches of Subgrade	5,000 square feet
Trenches	150 lineal feet
Lawn or Unimproved Areas	20,000 square feet
Building and Pavement Subgrades (Top 18 inches)	1,000 square feet

8. Existing fill and naturally deposited soils below the proposed building should be removed and replaced with LD-CLSM to a depth of 3 feet below pre-development ground surface or elevation 64 feet, whichever is lower. LD-CLSM should be used as fill from current ground surface up to the bottom of the ground floor slab base layer. The LD-CLSM should

be used below exterior slabs sensitive to differential movement between the slab and building. LD-CLSM should extend laterally a minimum of three feet outside the bottom outside edge of perimeter footings. LD- CLSM should only be placed over approved subgrade and should not be placed on frozen ground, snow, or ice.

9. LD-CLSM fill should be Controlled Low-Strength Materials using preformed foam as described in *American Concrete Institutes (ACI's) Report on Controlled Low-Strength Materials, Document 229R-13*. The in-service unit weight should be between 36 and 42 pounds per cubic foot, and minimum recommended compressive strength is 80 pounds per square inch.

10. Maximum recommended lift-thickness for LD-CLSM is 3 feet, unless data substantiating that thicker lifts using material of the same mix design and similar environmental conditions (e.g., air and ground temperature) are technically feasible, is approved by the designer. Additional lifts and concrete should not be placed on top of in-place LD-CLSM until it has a minimum unconfined compressive strength of 20 pounds per square inch.

11. Minimum recommended air and material temperature at the time of placement is 40 degrees. LD-CLSM should be protected from freezing temperatures in accordance with American Concrete Institute's cold-weather concreting procedures, except that LD-CLSM temperature shall be maintained at 50 degrees Fahrenheit or above for a minimum period of 24-hours after placement.

12. Unit weight of LD-CLSM should be determined in the field during placement in general accordance with *ASTM D6023, Standard Test Method for Unit Weight, Yield, Cement Content, and Air Content (Gravimetric) of Controlled Low-Strength Material (CLSM).* A minimum of one unit weight test should be conducted per 50 cubic yards, or one test per placement per day, whichever is greater.

13. LD-CLSM should be sampled and tested for unconfined compressive strength. Sampling and testing should be conducted in general accordance with *ASTM D4832, Standard Test Method for Preparation and Testing of Controlled Low-Strength Material (CLSM) Test Cylinders.* A minimum of one set of six test cylinders should be made per 50 cubic yards, or one set per placement per day, whichever is greater. Three test cylinders should be tested at 7-days and three test cylinders should be tested at 28-days.

14. LD-CLSM should be protected from freezing temperatures. Rigid insulation should be placed at the top and sides of LD-CLSM exposed to freezing temperatures. Rigid insulation should be extended vertically to an insulated exterior wall to create a continuous layer of insulation and down a minimum of 4 feet below surfaces exposed to freezing temperatures. Rigid insulation should be Type IV extruded polystyrene insulation and a minimum 2 inches thick.

6.03 Foundations

15. Foundations should be designed to withstand lateral, uplift, and overturning forces due to wind and earthquake. The in-place soils encountered in the explorations are not considered susceptible to liquefaction. In accordance with the 2009 *International Building Code*® the soil profile at the site is classified as Site Class D.

16. With proper site preparation, the building may be supported on spread footings bearing on LD-CLSM. Footings may be proportioned using an allowable bearing pressure of 3,000 pounds per square foot. The above allowable bearing pressure is based on footings bearing on a minimum of 3 feet of LD-CLSM.

    Minimum footing width should be in accordance with concrete design and building code requirements, and not less than 2 feet. For footings having a least lateral dimension less than 3 feet, the above allowable pressure should be taken as 1/3 of the above value times the least dimension in feet. Post-construction total settlements of less than 1-inch are estimated for the above subgrade improvement measures and contact pressure.

17. Excavation of footing and floor slab bearing surfaces in soil or fill should be performed by earthwork equipment fitted with smooth-edged buckets. Any loose, softened, or disturbed material due to construction traffic should be removed prior to placement of concrete.

18. It is recommended that design bottom of footing level for exterior footings bearing on LD-CLSM be 2 feet below lowest adjacent ground surface exposed to freezing temperatures. Interior and exterior footings should bear on LD-CLSM at the same elevation.

19. The integrity of natural soils and structural fill must be maintained during cold weather conditions. Soil subgrades should not be allowed to freeze. Freezing of subgrade soils beneath footings and floor slabs may result in frost heaving and post-construction settlement. The Contractor should make every effort to prevent freezing of subgrade soils. In the event frost penetration occurs, structural fill or naturally deposited soils should be removed and replaced to the depth of the frozen soils. At no time should frozen material be placed as fill.

20. Lateral loads from wind and earthquake may be resisted by friction between the bottom of the footings and LD-CLSM. A friction coefficient of 0.35 at the interfaces is recommended for use in design. A lateral bearing pressure of 150 lbs. per square foot per foot below grade are recommended.

6.04 Ground Floor Slabs

21. Interior ground floor may be slab-on-ground construction and designed based on a subgrade modulus of 150 pounds per cubic inch. The slab should be underlain by a minimum of 12 inches of compacted sand meeting the following gradation.

Sieve Size	Percent Passing
3/8 inch	100
No. 4	95 - 100
No. 8	80 - 100
No. 16	50 - 85
No. 30	25 - 60
No. 50	10 - 30
No. 100	2 - 10

The sand should be placed in compacted to at least 92 percent of the maximum dry density as determined by ASTM D 1557.

22. As a minimum, a vapor retarder should be provided below the floor slab to reduce moisture infiltration. Concrete slab-on-grade floors, regardless of their design or construction, are prone to cracking. The use of control joints is a method to reduce random patterned cracking in slabs on grade. However, even with the control joints, uncontrolled cracking should be expected.

    It is anticipated design and construction details of the floor slab, including concrete thickness, reinforcing, bedding, control joint depth and spacing, and the vapor retarder type or waterproofing and thickness, will be provided by the project Structural Engineer and/or Architect with considerations for the moisture sensitivity of floor finishes.

    Exterior slabs at entrances and at other locations where ground floor slabs might be exposed to freezing temperatures and where frost heaving and/or settlement would be problematic should be underlain by a minimum of 4 feet of underdrain stone. Underdrain stone should consist of *State of Maine Department of Transportation Standard Specifications*, 703.22 Underdrain Backfill Material Type C. The surrounding area should be pitched to drain away in order to reduce available moisture for ice and frost lense generation. The underdrain stone should be completely wrapped in a filter fabric to prevent the migration of fines from surrounding soils. Drains should be provided to outlet water that collects in the drainage stone.

23. Walkways and exterior slabs at locations where about 1 to 2 inches of settlement and some frost heaving would be tolerable should be underlain by a minimum of 24 inches of crushed stone completely wrapped in a filter fabric or structural fill to provide limited protection against heave. Surrounding grade should slope away from the structure to reduce available moisture for frost lens generation, and the drainage stone should be provided with a drainage pipe to outlet collected water.

6.05 Foundation Drainage

24. Perimeter footing drains should be installed around the building. The drains should be installed outside and adjacent to LD-CLSM and a minimum of 4 feet below surfaces exposed to freezing temperatures. The drains should consist of perforated pipe bedded in 2 cubic feet of underdrain stone per linear foot. The underdrain stone should be completely wrapped in a filter fabric such as Mirafi 160N.

25. Flow from the foundation and underslab drains should be conveyed by gravity to a surface drainage feature or storm drain that will be free flowing at all times and under all conditions. Multiple outlets should be provided so as not to be dependent on a single flow path.

    Surface water drainage systems including roof drains should not be connected to the perimeter foundation drains and/or underslab drains unless measures are provided to prevent the rise of water above the lowest underdrain/foundation drain invert level at all times and under all conditions. Surface water drainage features including roof drains, pipes, catch basins, manholes, drip edges, infiltration trenches and basins, should direct

water away from underslab and foundation drainage at all times and locations. Existing and new roof drains should not be connected to the foundation drains.

6.06 Cast-in-Place Concrete Foundation Walls

26. Structural fill should be used as backfill next to retaining walls. Only vibratory plate compactors and/or walk behind rollers should be used to compact backfill within 4 feet of retaining and foundation walls.

27. All fully drained foundation walls with unbalanced earth pressures acting upon them should be designed to withstand an at-rest equivalent fluid unit weight of 65 pounds per square foot (Ko = 0.5). Any retaining walls that cannot be allowed to move or are otherwise restrained, such as ones attached to building foundations, should be designed for at-rest conditions as well. Lateral load from vehicle surcharge can be accounted for by applying a uniform vertical pressure equal to 250 pounds per square foot multiplied by the at-rest earth pressure coefficient.

28. The above equivalent fluid unit weights assume provisions are made to prevent the rise of water above the bottom of wall (i.e., footing drains) and that the walls are backfilled with structural fill.

29. It is also recommended that retaining walls be designed with the resultant load within the middle third of the footing and that a maximum contact pressure at the toe of wall be no greater than 1,500 pounds per square foot.

6.07 Pavement Sections

30. It is recommended the pavement section subgrade be compacted by several passes with a smooth drum vibratory roller and a thorough evaluation of the paved area subgrade be undertaken. The evaluation should include proof-rolling with a loaded tandem axle dump truck weighing not less than 25 tons to aid in identifying soft pockets and areas of excess yielding. Wet or saturated subgrades should not be proof-rolled. Soft spots, unsatisfactory soils, areas of excessive pumping, or rutting in excess of 1 inch in depth should be excavated and replaced with suitable compacted fill. If high groundwater is present during subgrade preparation, the vibratory roller should be operated in the “static” mode to avoid liquefying the soil.

    Prior to the start of paving and as described above for pavement section subgrade, the surface of the pavement section base course material should be proof-rolled. Areas with any visually discernable pumping and/or rutting should be excavated and replaced with suitable compacted material.

31. The paved parking and drive areas should be constructed with the following pavement sections. Materials and placement methods should meet the requirements of current Maine Department of Transportation Standard Specifications (November 2014 edition).

Component	Thickness in Inches	
	Light Duty	Heavy Duty
Surface Course (Maine DOT Type 12.5 mm)	1-1/2	1-1/2
Binder Course (Maine DOT Type 19 mm)	2	2-1/2
Gravel Base (Maine DOT 703.06 Type A)	3	3
Subbase (Maine DOT 703.06 Type D)	18	21
Totals	**25**	**28**

Perimeter pavement underdrains or a free-draining ditch should be provided at the perimeter of paved areas. The invert of the drain or ditch should be a minimum of 1 foot below the pavement section. Underdrains spaced 40-feet on center should be provided below planned paved areas where pavement sections are in cuts.

Light duty pavement sections should be provided where traffic is limited to automobiles only, and heavy-duty pavement sections should be provided where large truck and tractor trailer traffic is anticipated.

32. Underdrains should consist of 2 cubic feet of MDOT Underdrain Backfill Material Type C per linear foot, wrapped in a filter fabric, and located a minimum of 1 foot beneath the pavement section. The trench above the geotextile wrapped underdrain stone should be backfilled with MDOT Underdrain Backfill Material Type B. The top of the underdrain trench backfill should be in direct contact with the pavement subbase.

33. Each pavement underdrain pipe should be provided with multiple outlet pipes so as not to be reliant upon a single flow path. Drains should be outletted by gravity to surface drainage features or storm drains that will be free flowing under all conditions.

34. The pavement sections are designed to support post-construction traffic loads. The sections are not designed to support construction traffic loading. Construction means and methods are the responsibility of the Contractor and the Contractor should anticipate the need to evaluate and employ methods to prevent subgrade softening, rutting, or impairment of overlaying fill materials as a result of construction traffic. Measures that should be considered by the Contractor include, but are not limited to, use of lower weight equipment, dispersion of construction traffic, constructing haul roads and construction traffic paths designed to support construction vehicles and equipment, and the use of geotextiles.

6.08 Utilities

35. Utilities may be earth-supported but must be designed to accommodate settlements of 2 to 3 inches outside the building limits. Flexible connections are recommended at building envelope penetrations. Bedding placed between the utility and subgrade should meet the utility and manufacturer requirements for the type of conduit or pipe being installed. Filter fabric should be placed beneath and along the sides of crushed stone bedding. Trench

backfill beneath slabs and pavements should be systematically compacted in lifts to reduce post-construction ground surface settlement and cracking of pavements and walkways.

36. It is difficult to properly place and compact trench backfill material where a trench box or excavation shield is used. There is a tendency to remove the trench box after the pipe is installed and then end-dump backfill material with little or no compactive effort applied. The usual result of the above construction practice is post-construction settlement of the ground surface along the trench alignment. This settlement may be tolerable for cross-country alignments; however, under paved areas this usually means having to re-level the surface years after the construction is complete. If this situation is not acceptable, a systematic compaction effort must be applied to the trench backfill below pavements.

6.09 Temporary Excavations

37. Soils at this site, encountered within the anticipated depths of excavations, consist of silty sand, sandy silt, and silty clay. It is anticipated that foundation and utility excavations can be accomplished using sloped, open-cut techniques where these excavations are outside the influence zone of existing foundations or other structural elements. It is also anticipated that dewatering can be accomplished using sumps and open pumping methods.

    The Contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

    As a safety measure, it is recommended all vehicles and spoil piles be kept a minimum lateral distance from the top of excavations equal to no less than 100 percent of the slope height. Exposed slope faces should be protected against the elements.

6.10 Geotechnical Observation

Geotechnical recommendations provided as the basis for design of this project were developed based on conceptual design information and limited numbers of soil borings and tests. The Owner should be sensitive to the potential need for adjustment during final design and construction. It is recommended that the Owner retain RWG&A to observe geotechnical construction aspects of the project.

As part of the project's construction phase, it is recommended that the Owner retain RWG&A to observe geotechnical construction aspects of the project. If RWG&A is not retained to provide geotechnical observation and associated testing services, RWG&A would not have the opportunity to verify site work is completed in accordance with RWG&A's recommendations. Post-construction performance of the building and site work features would necessarily be based on the interpretations and judgement of others.

Construction services should include observing general compliance with the design concepts, specifications and recommendations, and assisting in development of design changes should

subsurface conditions differ from those anticipated prior to the start of construction. Observation improves the likelihood that the design intent will be carried out during construction. For this project, geotechnical observation and testing of the following aspects is recommended:

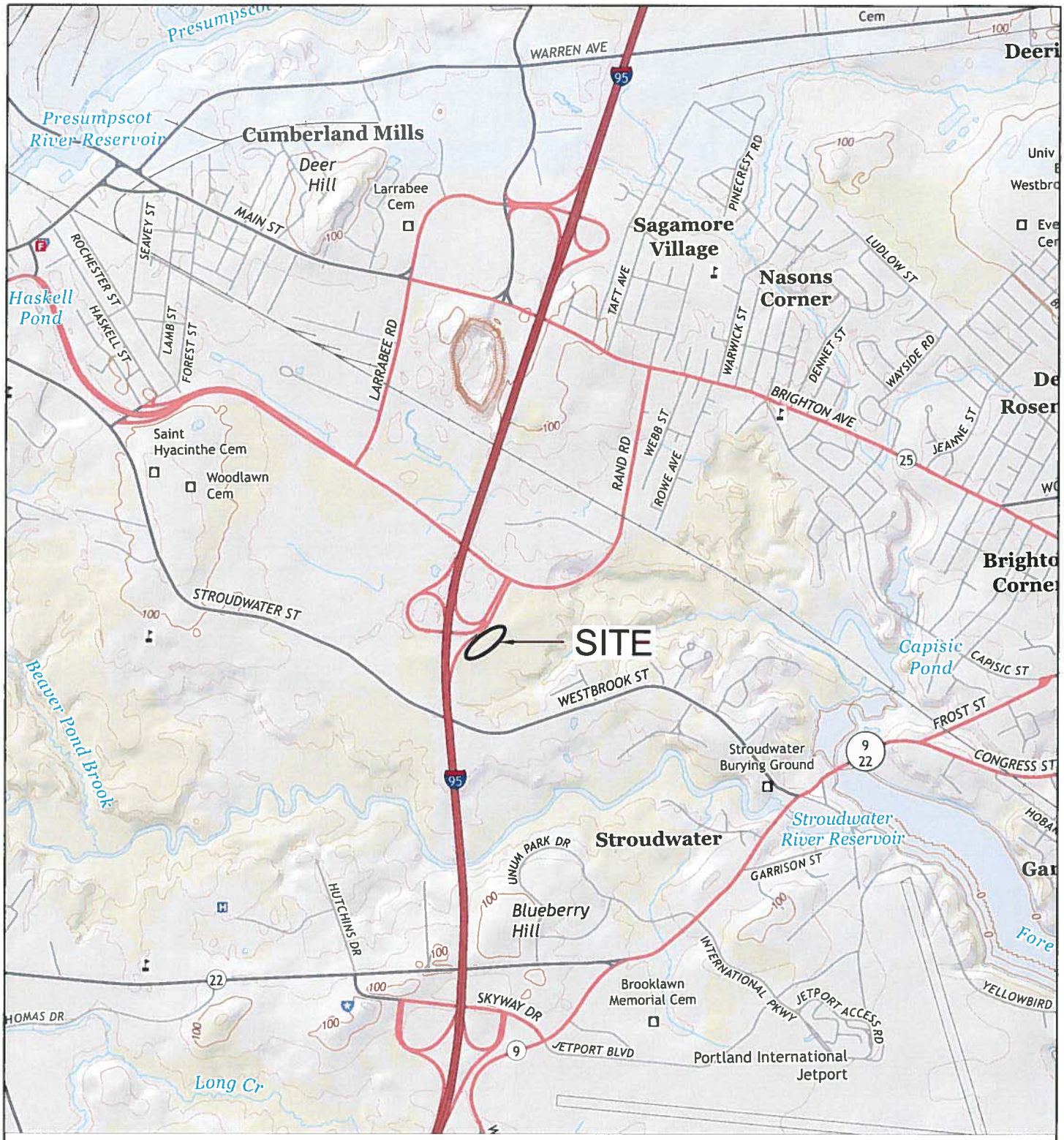
- Review geotechnical aspects of site work submittals,
- Observe site stripping and proof-rolling of subgrade soils,
- Assess suitability of exposed LD-CLSM, spread footing, and slab-on-grade subgrades,
- Field sampling and testing of LD-CLSM,
- Laboratory testing LD-CLSM, and
- Perform laboratory and field testing of structural and other compacted fills. Testing would include grain-size distribution, moisture-density testing, and in-place density testing to determine percent relative compaction and total unit weights.

In addition to geotechnical observation, RWG&A can provide construction inspection and materials testing services. This would include soils, portland cement and asphaltic concrete, masonry, fire proofing, destructive and non-destructive testing, and special inspection services in fulfillment of building code requirements. Soil and materials testing would be performed at the RWG&A's soil testing laboratory in Saco, Maine, which is a full service laboratory accredited by the American Association of State Highway and Transportation Officials (AASHTO) for the testing of soils, steel, concrete, masonry and asphalt.

7.0 CLOSURE

This report has been prepared for specific application to the Patrons Oxford Insurance Company building to be built on Lot 4 of Portland Technology Park in Portland, Maine, and for the exclusive use of Patrons Oxford Insurance Company. This work has been completed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. In the event that any changes are made in the nature, design, or location of proposed buildings, the conclusions and recommendations of this report should be reviewed by RWG&A.

The recommendations presented are based on the results of widely spaced explorations. The nature of variations between explorations may not become evident until construction. If variations are encountered, it will be necessary for RWG&A to re-evaluate the recommendations presented in this report. RWG&A should be retained to review design and specifications to verify that geotechnical evaluations and recommendations provided in this report have been interpreted in the manner they were intended.



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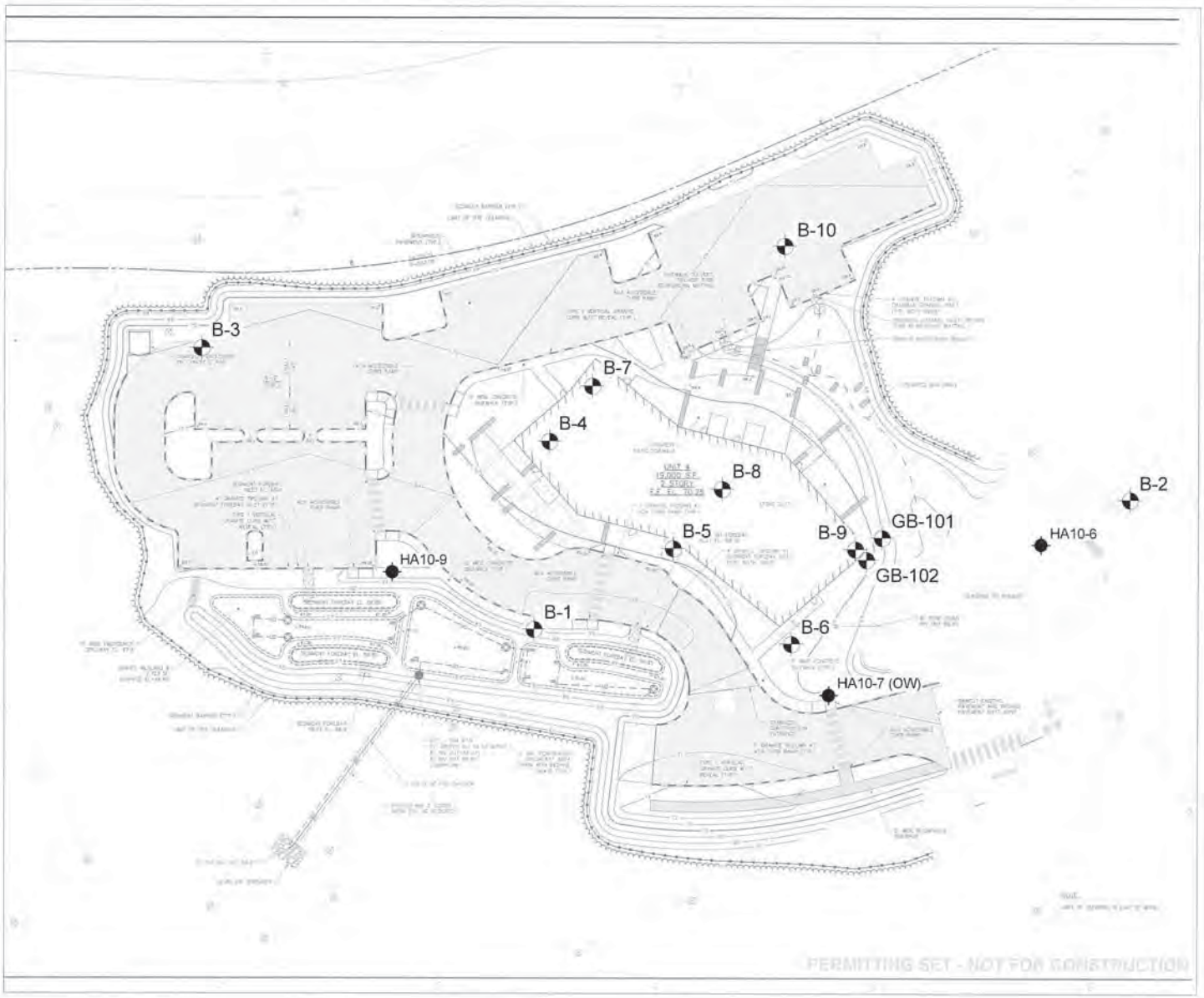
SOURCE:
USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLE OF PORTLAND WEST, ME, DATED 2014.

FIGURE 1
LOCUS MAP
PROPOSED PATRONS OXFORD INSURANCE
OFFICE BUILDING
PORTLAND, MAINE

OCTOBER 2015 PROJECT NO. 1518-002

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Environmental Consulting • Materials Testing Services
Quality Services • Timely Advice • Sensible Solutions
www.rwgillespie.com

G:\AutoCad\1500\1518-002\FIG 1, LOCUS MAP 1518-002.dwg, 10/6/2015 1:47:04 PM, \\SACO\Xerox WorkCentre 7855 PCL



LEGEND:

B-1 APPROXIMATE LOCATION OF SOIL BORING PERFORMED BY RWG&A JULY AND SEPTEMBER 2015.

HA10-6 APPROXIMATE LOCATION OF SOIL BORING PERFORMED BY OTHERS AUGUST 2010.

SOURCE:
DRAWING C-03, TITLED "LCE 4 SITE GRADING, DRAINAGE, AND EROSION CONTROL PLAN", BY WOODARD & CURRAN, DATED SEPTEMBER 2015.

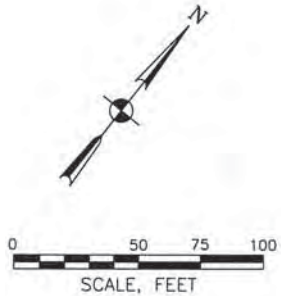


FIGURE 2
EXPLORATION LOCATION PLAN
PROPOSED PATRONS OXFORD INSURANCE
OFFICE BUILDING
PORTLAND, MAINE

OCTOBER 2015 PROJECT NO. 1518-002

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APPENDIX A

LIMITATIONS

Geotechnical Engineering Services
Proposed Patrons Oxford Insurance Company Office Building
Portland, Maine

LIMITATIONS

This geotechnical evaluation has been limited to consideration of the soil and foundation aspects of the proposed building and site development. The primary purpose of RWG&A's services was to explore subsurface conditions and to provide geotechnical parameters for design and construction. This report identifies construction considerations intended to solely assist engineers that will design the project and monitor its construction, and not to the benefit of others including, but not limited to, the Contractor.

This geotechnical evaluation report might also aid the Contractor responsible for construction, but reliance is not extended to the Contractor for the purposes of bidding and/or building the project. The recommendations and comments provided herein are not intended to be instructions or directives to the project Contractor. The project Contractor must evaluate construction issues encountered in the work on the basis of their experience with similar projects taking into account their own methods and procedures.

This report has not considered the construction from a worker safety perspective. Construction safety is the responsibility of the project Contractor, who is also solely responsible for the means, methods, and sequencing of construction operations. RWG&A is providing this information as a service to Patrons Oxford Insurance Company. Under no circumstances should this information be interpreted to mean that RWG&A and/or Patrons Oxford Insurance Company are assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

RWG&A's scope of services did not include an environmental site assessment relative to oil and hazardous materials or evidence of a potential release or threat of oil or hazardous materials on, below, or around the site. Any statement in this report, or on the exploration logs, regarding odors or unusual or suspicious conditions is for informational purposes only and is not intended to constitute an environmental assessment. RWG&A's scope of services also excluded any service to investigate or detect the presence of mold or other biological contaminants, or any service that was designed or intended to prevent or lower the risk of the occurrence of an infestation of mold or other biological contaminants (MOBC infestation).

APPENDIX B

EXPLORATION LOGS

Geotechnical Engineering Services
Proposed Patrons Oxford Insurance Company Office Building
Portland, Maine

RWG&A, Inc. soil descriptions are based on the following criteria. Descriptive terminology is used to denote the grain size and percentage of each component. The soil descriptions are based on visual-manual classification procedures, Standard Penetration Test results, and the results of laboratory testing on selected soil samples, where available. The Unified Soil Classification Group Symbol will be indicated in capital letters.

COMPONENT DEFINITIONS BY GRADATION SIEVE LIMITS

Materials	Definitions	Fractions	Upper	Lower
Boulders	Material too large to pass through an opening 12 in. square.			
Cobbles	Material passing through a 12 in. opening and retained on the 3 in. sieve.			
Gravel	Material passing the 3 in. sieve and retained on 1/4" (No. 4 sieve).	Coarse Fine	3 in. 3/4 in.	3/4 in. 1/4 in.
Sand	Material passing the No. 4 sieve and retained on the No. 200 sieve.	Coarse Medium Fine	No. 4 (1/4") No. 10 (1/8") No. 40 (1/32")	No. 10 (1/8") No. 40 (1/32") No. 200
Silt	Material passing the No. 200 sieve which is usually non-plastic in character and exhibits little or no strength when air dried.		No. 200	
Clay	Material passing the No. 200 sieve which can also be made to exhibit plasticity within a certain range of moisture contents and which exhibits considerable strength when air dried.		No. 200	

SOIL DESCRIPTION

General

Soils are described as to the Unified Soil Classification Systems Group Symbol, density or consistency, color, grain size distribution and other pertinent properties such as plasticity and dry strength. The RWG&A order of descriptors is as follows:

1. USCS Group Name and Symbol, or Fill
2. Density or Consistency
3. Moisture
4. Grain Size & Constituent percentages
5. Other pertinent descriptors
6. Color

DESCRIPTIVE TERMINOLOGY DENOTING COMPONENT PROPORTIONS

Descriptive Terms	Range of Proportions
Noun (major component)	>50%
Adjective (secondary component)	20 - 50%
Some (third component)	25 - 45%
Little (second or third component)	15 - 25%
Few (second or third component)	5 - 15%
Trace	0 - 5%
With	Amount of component not determined. Used as a conjunction only. Does not indicate component percentile

OTHER DESCRIPTIVE TERMS

Where appropriate, geological classifications are also used (Glacial Till, etc.)

TYPICAL DESCRIPTIONS

SAND WITH SILT (SP-SM): Medium dense, moist, coarse to medium sand, few silt, brown.
FILL: Loose, dry, fine sand, some gravel and silt, with brick and concrete fragments, dark brown.
SILTY CLAY (CL): Very stiff, moist, silty clay, olive-brown.

DENSITY OR CONSISTENCY OF SOILS

COHESIVE SOILS

Consistency of Cohesive Soils	Standard Penetration Test (Blows Per Foot) (N)	Undrained Shear Strength (TSF)
Very Soft	0 - 2	Below 0.13 (250 psf)
Soft	2 - 4	0.13 to 0.25 (to 500 psf)
Medium	4 - 8	0.25 to 0.5 (to 1,000 psf)
Stiff	8 - 15	0.5 to 1.0 (to 2,000 psf)
Very Stiff	15 - 30	1.0 to 2.0 (to 4,000 psf)
Hard	Over 30	over 2.0 (over 4,000 psf)

Consistency of cohesive soils is based upon field vane shear, torvane, or pocket penetrometer, or laboratory vane shear or Unconsolidated-Undrained Triaxial Compression tests. Consistency of cohesive soils is based upon the Standard Penetration test when no other data is available.

COHESIONLESS SOILS

Density of Cohesionless Soils	Standard Penetration Test (Blows per Foot) (in)
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	over 50

PENETRATION RESISTANCE

STANDARD PENETRATION TEST (ASTM D1586) - a 2.0-inch diameter, 1-3/8 inch inside diameter split barrel sample is driven into soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The total number of blows required for penetration from 6 to 18 inches is the Standard Penetration Resistance (N).

COBBLES AND BOULDERS

The percentage of cobbles and boulders is estimated visually where possible.

Descriptive Term	Estimated Percentage
Very Few	0 - 10%
Few	10 - 25%
Common	25 - 40%
Numerous	40 - 50%

If the percentage cannot be determined, as in a typical test boring, then use "with" to indicate the presence of cobbles and/or boulders. (i.e., gravelly sand with cobbles and boulders).

FILLS

The following terminology is used to denote size range of man-made materials within fill deposits:

Size Range	Comparative Soil Terms
<No. 200 Sieve	Silt - size
No. 200 to 1/4 in.	Sand - size
1/4 in. to 3 in.	Gravel - size
3 in. to 12 in.	Cobble - size
>12 in.	Boulder - size

SUPPLEMENTAL SOIL DESCRIPTION TERMINOLOGY

Term	Example	
Seam	Typically 1/16 to 1/2 inch thick	1/4 inch sand seams
Layer	Greater than 1/2 inch thick	2-inch sand layers
Occasional	One or less per foot of thickness	
Frequent	More than one per foot of thickness	
Interbedded	Alternating soil layers of different composition	
Varved	Alternating thin seams of silt and clay	
Mottled	Variations in color	

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Boring Log: B-1
Total Depth (ft): 12
Sheet 1 of 1

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 7'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/20/2015
Date Completed: 07/20/2015
Surface Elevation: 67 (Feet)
Drilling Method: SSA
Casing Type: N/A

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (3 inches).	20	2 2 4 7	6		
				SILTY SAND (SM); Loose, moist, fine sand, some silt, trace root matter, gray with brown mottling.					
5			S-2		20	2 4 4 5	8		
				SILTY CLAY (CL); Very soft, wet, silty clay, gray.					
10			S-3		23	WOH/ 24"	WOH		
				Bottom of Exploration at 12'; Not Refusal.					
15									
20									
25									

Notes:

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Boring Log: B-2
Total Depth (ft): 12
Sheet 1 of 1

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 4'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/20/2015
Date Completed: 07/20/2015
Surface Elevation: 67 (Feet)
Drilling Method: SSA
Casing Type: N/A

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	FILL; Sand with silt, very loose, moist, fine to medium sand, little silt, few gravel from 1.5' - 3', dark brown.	6	1 1 3 3	4		
5			S-2	SILTY SAND WITH CLAY (SM); Loose, wet, fine sand, some silt, little clay from 5' - 5.5', grayish brown.	17	3 2 5 4	7		
10			S-3	SILTY CLAY (CL); Soft, wet, silty clay, gray.	6	2 1 1 1	2		
15				Bottom of Exploration at 12'; Not Refusal.					
20									
25									

Notes:

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Boring Log: B-3
Total Depth (ft): 12
Sheet 1 of 1

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 5'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/20/2015
Date Completed: 07/20/2015
Surface Elevation: 69 (Feet)
Drilling Method: SSA
Casing Type: N/A

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (10 inches).	24	1 1 3 5	4		
				SILTY SAND (SM); Very loose, moist to wet, fine sand, some silt, light brown to grayish brown.					
5 ▽			S-2	SANDY SILT (ML); Loose to medium dense, silt with some sand, wet, grayish brown.	22	5 5 6 5	11	24.5	MC GS
10			S-3		23	3 3 3 1	6		
				Bottom of Exploration at 12'; Not Refusal.					
15									
20									
25									

Notes:

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Boring Log: B-4
Total Depth (ft): 51
Sheet 1 of 2

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 4'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/21/2015
Date Completed: 07/21/2015
Surface Elevation: 67.5 (Feet)
Drilling Method: Drive and wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (6 inches).	12	1 1 2 6	3		
			SILTY SAND (SM): Very loose to loose, moist to wet, fine sand, some silt, grayish brown.					
5		S-2	Seams of silty clay from 5' - 7'.	20	3 3 5 6	8		
			SILTY CLAY (CL); Very soft, wet, silty clay, gray.					
10		FV	Field Vane: Undrained Shear Strength=530 psf; residual=80 psf.					
15		FV	Field Vane: Undrained Shear Strength=490 psf; residual=50 psf.					
		FV	Field Vane: Undrained Shear Strength=410 psf; residual=50 psf.					
20		FV	Field Vane: Undrained Shear Strength=330 psf; residual=0 psf.					
		FV	Field Vane: Undrained Shear Strength=340 psf; residual=0 psf.					
25		FV	Field Vane: Undrained Shear Strength=380 psf; residual=0 psf.					
		FV	Field Vane: Undrained Shear Strength=410 psf; residual=0 psf.					
			Hydraulic push probe with "a" rod from 26' - 51'.					

Notes: Used 3 5/8x9" Acker field vane. Unable to push vane to 10.8', possible sand seam.

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Boring Log: B-4
Total Depth: 51
Sheet 2 of 2

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 4'

RWG&A Project No. 1518-002
Surface Elevation: 67.5 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30									
35									
40									
45									
50				Bottom of Exploration at 51'; Push probe refusal, probable Glacial Till.					
55									

Notes: Used 3 5/8x9" Acker field vane. Unable to push vane to 10.8', possible sand seam.

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Boring Log: B-5
Total Depth (ft): 26.6
Sheet 1 of 1

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 4'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/21/2015
Date Completed: 07/21/2015
Surface Elevation: 67 (Feet)
Drilling Method: Drive and wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (5 inches).	14	1 1 2 3	3		
				SILTY SAND (SM): Very loose to loose, moist to wet, fine sand, some silt, grayish brown.					
5			S-2	Silty clay layers from 5' - 7'.	22	3 5 4 4	9		
				SILTY CLAY (CL)					
10			FV	Field Vane: Undrained Shear Strength=820 psf; residual=50 psf.					
15			FV	Field Vane: Undrained Shear Strength=440 psf; residual=80 psf.					
			FV	Field Vane: Undrained Shear Strength=380 psf; residual=80 psf.					
20			FV	Field Vane: Undrained Shear Strength=440 psf; residual=70 psf.					
			FV	Field Vane: Undrained Shear Strength=360 psf; residual=50 psf.					
25			FV	Field Vane: Undrained Shear Strength=440 psf; residual=30 psf.					
			FV	Field Vane: Undrained Shear Strength=440 psf; residual=40 psf.					
				Bottom of Exploration at 26.6'; Not Refusal.					

Notes: Used 3 5/8x9" Acker field vane. Unable to push vane to 10.8', possible sand seam.

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Boring Log: B-6
Total Depth (ft): 27
Sheet 1 of 1

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 5'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/21/2015
Date Completed: 07/21/2015
Surface Elevation: 67 (Feet)
Drilling Method: 2 1/4 HSA
Casing Type: NA

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (6 inches).	16	1 2 3 6	5		
				SANDY SILT (ML); Loose, moist, silt, some fine sand, grayish brown.					
				SILTY SAND (SM); Loose, moist to wet, fine sand, some silt, grayish brown.					
5 ▽			S-2	SANDY SILT (ML); Loose, wet, silt with some sand, grayish brown.	12	4 4 4 4	8	27.6	MC GS
10			S-3	SILTY CLAY (CL); Soft to very soft, wet, silty clay, gray.	14	2 1 1 1	2	36.6	MC
15			S-4		23	WOH/ 24"	WOH	41.8	MC
20			S-5		24	WOH/ 24"	WOH	46.2	MC
25			S-6		2	WOR/ 24"	WOR		
				Bottom of Exploration at 27'; Not Refusal.					

Notes:

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Boring Log: B-7
Total Depth (ft): 27
Sheet 1 of 1

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 7'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/20/2015
Date Completed: 07/20/2015
Surface Elevation: 67.5 (Feet)
Drilling Method: 2 1/4 HSA
Casing Type: N/A

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	TOPSOIL AND ORGANIC MATERIAL (6 inches).	7	1 1 7 6	8		
				SILTY SAND (SM); Loose, moist, fine sand, some silt, grayish brown than orangish brown.					
5			S-2	SILTY CLAY (CL); Stiff to very soft, moist to wet, silty clay, trace fine sand, gray.	19	3 5 5 5	10		
				Pocket Penetrometer: Undrained Shear Strength: Su=2.5 ksf					
10			S-3		4	1 2 1 1	3	30.9	MC
15			S-4		17	1 1 0 1	1		
20			S-5		16	WOH/ 24"	WOH		
25			S-6		19	WOH/ 24"	WOH		
				Bottom of Exploration at 27'; Not Refusal.					

Notes:

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Boring Log: B-8
Total Depth (ft): 56
Sheet 1 of 2

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 8'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/21/2015
Date Completed: 07/21/2015
Surface Elevation: 67.5 (Feet)
Drilling Method: Drive and wash
Casing Type: N/A

DEPTH, FT.	SYMBOL SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (7 inches).	16	1 2 4 5	6		
			SILTY SAND (SM): Loose, moist, fine sand, some silt, dark brown to grayish brown.					
			SILTY CLAY (CL): Stiff to very soft, moist to wet, silty clay, trace fine sand from 2' - 7', grayish brown to gray.					
5		S-2		18	3 3 5 4	8		
			Pocket Penetrometer: Undrained Shear Strength: Su=3,000 psf.					
10		S-3		24	WOH/ 24"	WOH	46.5	MC
15		U-1					46	MC C LV
20		FV	Field Vane: Undrained Shear Strength=550 psf; residual=50 psf.					
		FV	Field Vane: Undrained Shear Strength=490 psf; residual=70 psf.					
25		FV	Field Vane: Undrained Shear Strength=600 psf; residual=80 psf.					
		FV	Field Vane: Undrained Shear Strength=600 psf; residual=80 psf.					

Notes: Used 3 5/8x9" Acker field vane. Unable to sample below 40' due to cave-in.

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Boring Log: B-8
Total Depth: 56
Sheet 2 of 2

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 8'

RWG&A Project No. 1518-002
Surface Elevation: 67.5 (Feet)
Casing Type: N/A

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30			U-2					45	MC C LV
35			FV	Field Vane: Undrained Shear Strength=570 psf; residual=50 psf.					
			FV	Field Vane: Undrained Shear Strength=600 psf; residual=30 psf.					
40			S-4	SILTY SAND WITH GRAVEL (SM); Loose, wet, fine to coarse sand, some silt, little gravel, gray.	7	4 4 5 4	9		
45									
50									
55				Increased drilling resistance from 55' - 56'.					
				Bottom of Exploration at 56'; Roller cone refusal, possible bedrock or boulder.					

Notes: Used 3 5/8x9" Acker field vane. Unable to sample below 40' due to cave-in.

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Boring Log: B-9
Total Depth (ft): 62
Sheet 1 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 6'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/21/2015
Date Completed: 07/21/2015
Surface Elevation: 67 (Feet)
Drilling Method: Drive and wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0			S-1	FILL; Bark Mulch (3 inches).	14	1	2		
				FILL; Silty sand, very loose, moist, fine sand, some silt, trace medium sand, bluish gray.		1			
						1			
				SILTY SAND (SM); Medium dense, moist to wet, fine sand, some silt, grayish brown.		1			
5			S-2		17	4	10		
						5			
						5			
						3			
10			FV	SILTY CLAY (CL); Medium stiff to soft, wet, silty clay, gray. Field Vane: Undrained Shear Strength=650 psf; residual=80 psf.					
			FV	Field Vane: Undrained Shear Strength=600 psf; residual=80 psf.					
15			FV	Field Vane: Undrained Shear Strength=440 psf; residual=70 psf.					
			FV	Field Vane: Undrained Shear Strength=390 psf; residual=50 psf.					
20			FV	Field Vane: Undrained Shear Strength=410 psf; residual=70 psf.					
			FV	Field Vane: Undrained Shear Strength=400 psf; residual=50 psf.					
25			FV	Field Vane: Undrained Shear Strength=380 psf; residual=0 psf.					
			FV	Field Vane: Undrained Shear Strength=380 psf; residual=0 psf. Began roller cone wash probe.					

Notes: Used 3 5/8x9" Acker field vane.

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Boring Log: B-9
Total Depth: 62
Sheet 2 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 6'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30									
35									
40									
45									
50									
				Increased drilling resistance, probable granular soil from 52' - 62'.					
55									

Notes: Used 3 5/8x9" Acker field vane.

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Boring Log: B-9
Total Depth: 62
Sheet 3 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 6'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
60									
				Bottom of Exploration at 62'; Roller cone refusal, possible bedrock or boulder.					
65									
70									
75									
80									
85									

Notes: Used 3 5/8x9" Acker field vane.

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Boring Log: B-10
Total Depth (ft): 12
Sheet 1 of 1

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfilled with cuttings
Observed Water Depth: 5'

Drilling Contractor: Northern Test Boring
Drill Rig: Diedrich D50
Driller Rep.: Mike Nadeau
Date Started: 07/20/2015
Date Completed: 07/20/2015
Surface Elevation: ()
Drilling Method: SSA
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (3 inches).	18	1 2 2 5	4		
			SILTY SAND (SM); Very loose to medium dense, moist to wet, fine sand, some silt, orangish brown to grayish brown.					
5 ▽		S-2		20	5 6 7 7	13		
			SILTY CLAY (CL); Stiff than soft, wet, silty clay, gray.					
10		S-3		16	1 1 2 4	3		
			SILTY SAND (SM); Very loose, wet, fine sand, some silt, gray.					
			Bottom of Exploration at 12'; Not Refusal.					
15								
20								
25								

Notes:

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Boring Log: GB-101
Total Depth (ft): 72
Sheet 1 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Installed Solid Casing
Observed Water Depth: 7'

Drilling Contractor: Great Works Test Boring
Drill Rig: CME850
Driller Rep.: Jeff Lee
Date Started: 09/17/2015
Date Completed: 09/17/2015
Surface Elevation: 67 (Feet)
Drilling Method: Drive and Wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0				FILL; BARK MULCH (3 inches).					
				FILL, Silty sand, moist, fine sand, some silt, trace medium sand, bluish gray					
				SILTY SAND (SM); Moist to wet, fine sand, some silt, grayish brown.					
5									
	▽								
10				SILTY CLAY (CL); Silty clay, gray.					
15									
20									
25									

Notes: Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

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Boring Log: GB-101
Total Depth: 72
Sheet 2 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 7'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30									
35									
40									
45									
50			S-1	SILTY SAND (SM); Medium dense, wet, fine to medium sand, some silt, few gravel and coarse sand, gray.	11	4 7 4 3	11		
55				Bedrock encountered at 57', roller cone drilled to 72'.					

Notes: Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

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Boring Log: GB-101
Total Depth: 72
Sheet 3 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 7'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
60				Bedrock.					
65									
70									
				Bottom of Exploration at 72'; Terminated boring 15' into rock.					
75									
80									
85									

Notes: Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

Boring Log: GB-102
Total Depth (ft): 72
Sheet 1 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Installed Solid Casing.
Observed Water Depth: 7'

Drilling Contractor: Great Works Test Boring
Drill Rig: CME850
Driller Rep.: Jeff Lee
Date Started: 09/18/2015
Date Completed: 09/18/2015
Surface Elevation: 67 (Feet)
Drilling Method: Drive and Wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0				TOPSOIL AND ORGANIC MATERIAL (4 inches).					
				SILTY SAND (SM); Moist, fine sand, some silt, grayish brown.					
5									
	▽								
10				SILTY CLAY (CL); Medium stiff to soft, silty clay, gray.					
15									
20			FV	Field Vane: Undrained Shear Strength: Su=480 psf, residual 50 psf.					
			FV	Field Vane: Undrained Shear Strength: Su=490 psf, residual 40 psf.					
25									

Notes: 1. Used 3 5/8"x9" Acker field vane for shear strength testing.
2. Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

Boring Log: GB-102
Total Depth: 72
Sheet 2 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 7'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30			FV	Field Vane: Undrained Shear Strength: Su=490 psf, residual 50 psf.					
			FV	Field Vane: Undrained Shear Strength: Su=550 psf, residual 40 psf.					
35									
40			FV	Field Vane: Undrained Shear Strength: Su=640 psf, residual 20 psf.					
			FV	Field Vane: Undrained Shear Strength: Su=520 psf, residual 0 psf.					
45				SILTY SAND (SM); Fine to medium sand, some silt, few gravel and coarse sand, gray.					
50									
55				Bedrock encountered at 57.5 feet, roller cone drilled to 72'.					

Notes: 1. Used 3 5/8"x9" Acker field vane for shear strength testing.
2. Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

Boring Log: GB-102
Total Depth: 72
Sheet 3 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 7'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
60				Bedrock.					
65									
70									
				Bottom of Exploration at 72'; Terminated boring 14.5' into rock.					
75									
80									
85									

Notes: 1. Used 3 5/8"x9" Acker field vane for shear strength testing.
2. Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

APPENDIX C

2010 EXPLORATION LOGS

Geotechnical Engineering Services
Proposed Patrons Oxford Insurance Company Office Building
Portland, Maine

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA10-6

Project Rand Road Office Park Planned Unit Development, Portland, Maine
Client Woodard & Curran
Contractor Maine Test Borings

File No. 34981-000
Sheet No. 1 of 1
Start 9 August 2010
Finish 9 August 2010
Driller R. Leonard
H&A Rep. M. Snow

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	--	Rig Make & Model: Mobile B-53
Inside Diameter (in.)	--	1.375	--	Bit Type: Cutting Head
Hammer Weight (lb)	--	140	-	Drill Mud: None
Hammer Fall (in.)	--	30	-	Casing: SSA to 10.0 ft
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: NA

Elevation 66.5 (approx.)
Datum NGVD 29

Location
N 302,826.0
E 2,909,875.0

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 3 8 11	S1 14	0.0 2.0	0.3	OL/OH	-FOREST MAT-										
					SM	Medium dense, gray and brown, silty SAND (SM), mps 0.42 mm, no odor, dry					85	15				
				1.5		-TOPSOIL-										
					CL	Medium stiff, gray-brown, lean CLAY (CL) with organic matter, mps 0.075 mm, no odor, dry						100				
	9 16 13 7	S2 22	2.0 4.0	2.0	SM	Medium dense, brown, mottled, silty SAND (SM) with organics, mps 0.42 mm, no odor, moist Note: Water encountered at approximately 4.0 ft.					85	15				
5	5 8 7 12	S3 17	4.0 6.0		SM	Medium dense, brown, mottled, silty SAND (SM) with organics, with occasional gray-brown, mottled, lean clay layers, mps 0.42 mm, no odor, wet -MARINE DEPOSIT-					85	15				
	7 12 9 7	S4 19	6.0 8.0		SM	Medium dense, brown, mottled, silty SAND (SM), mps 0.42 mm, no odor, wet					85	15				
				7.6	CL	Very stiff, gray-brown, mottled, lean CLAY (CL) with organics, mps <1 mm, no odor, wet						100				
	2 2 2 2	S5 24	8.0 10.0	8.0	SM	Very loose, brown-gray, mottled, silty SAND (SM), mps 0.42 mm, no odor, wet					85	15				
				9.0	CL	Soft, gray, mottled, lean CLAY (CL), mps <1 mm, no odor, wet						100				
10				10.0		Bottom of Exploration at 10.0 ft Note: No refusal.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (ft)	10.0
Rock Cored (ft)	0.0
Samples	5S

Boring No. HA10-6

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-03-08.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\34981 - RAND ROAD\000\FIELD EXPLORATIONS\34981-000 HA10-1_HA10-13TB.GPJ 28 Sep 10

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA10-7(OW)

Project Rand Road Office Park Planned Unit Development, Portland, Maine
Client Woodard & Curran
Contractor Maine Test Borings

File No. 34981-000
Sheet No. 1 of 3
Start 10 August 2010
Finish 11 August 2010
Driller R. Leonard
H&A Rep. M. Snow
Elevation 66.5 (approx.)
Datum NGVD 29
Location N 302,717.0 E 2,909,844.0

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	NW	S	--	Rig Make & Model: Mobile B-53
Inside Diameter (in.)	3.0	1.375	--	Bit Type: Cutting Head
Hammer Weight (lb)	300	140	-	Drill Mud: None
Hammer Fall (in.)	16	30	-	Casing: SSA to 10.0 ft/NW to 50.0 ft
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: NA

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 3 5 11	S1 13	0.0 2.0		0.2	OL/ OH	-FOREST MAT- Loose, gray-brown, silty SAND (SM) with organic matter and roots, mps 0.42 mm, no odor, dry					60	40				
					1.0	SM	-TOPSOIL-					85	15				
	4 5 8 9	S2 23	2.0 4.0			SM	Medium dense, brown-gray, mottled silty SAND (SM), mps 0.42 mm, no odor, moist -MARINE DEPOSIT- Note: Water encountered at approximately 4.0 ft.										
5	4 6 4 5	S3 23	4.0 6.0			SM	Loose, brown-gray, mottled silty SAND (SM) with occasional gray-brown silt laminae, mps 0.42 mm, no odor, moist					85	15				
					5.5	CL	Stiff, gray-brown, mottled, lean CLAY (CL), mps <1 mm, no odor, moist to wet						100				
	2 3 2 4	S4 20	6.0 8.0		6.0	SM	Loose, gray-brown, silty SAND (SM), mps 0.42 mm, no odor, wet					60	40				
					6.7	CL	Medium stiff, gray-brown, lean CLAY (CL), mps <1 mm, no odor, moist to wet						100				
					7.3	SM	Loose, gray-brown, silty SAND (SM), mps 0.42 mm, no odor, wet					70	30				
	WOH WOH WOH WOH	S5 24	8.0 10.0		8.4	CL	Very soft, gray, lean CLAY (CL), mps 0.42 mm, no odor, wet						100				
10							Note: Set HW casing at 10.0 ft. Continue boring with NW casing from 10.0 to 50.0 ft. -MARINE DEPOSIT-										
15																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water
8/10/10	12:10	0	In Well	13.0	0.8

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 52.0
Rock Cored (ft) 0.0
Samples 13S
Boring No. HA10-7(OW)

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Plasticity**: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A-TEST BORING-07-1 H&A-LIB07-IR-POR-06-03-08.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\34981 - RAND ROAD\000\FIELD EXPLORATIONS\34981-000 HA10-1_HA10-13TB.GPJ 28 Sep 10

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA10-7(OW)
File No. 34981-000
Sheet No. 2 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
15	WOR WOR WOM WOM	S6 24	15.0 17.0			CL	Soft to medium stiff, gray, lean CLAY (CL), mps < 1 mm, no odor, wet FV1, 15.4 to 16.0 ft: Raw torque=14/0 ft-lbs, Su=520/0 psf FV2, 16.4 to 17.0 ft: Raw torque=11/1 ft-lbs, Su=410/40 psf						100				
20	WOM WOM WOM WOM	S7 24	20.0 22.0			CL	Soft to medium stiff, gray, lean CLAY (CL) with black streaks, mps < 1 mm, no odor wet -MARINE DEPOSIT-						100				
25	WOR WOR WOR WOR	S8 22	25.0 27.0			CL	Very soft to soft, gray, lean CLAY (CL) with black streaks, mps < 1 mm, no odor, wet FV3, 25.4 to 26.0 ft: Raw torque=3/1 ft-lbs, Su=110/40 psf FV4, 26.4 to 27.0 ft: Raw torque=10/1 ft-lbs, Su=370/40 psf						100				
30	WOR WOR WOR WOR	S9 24	30.0 32.0			CL	Very soft to soft, gray, lean CLAY (CL) with black streaks, mps < 1 mm, no odor, wet -MARINE DEPOSIT-						100				
35	WOR WOR WOR WOR	S10 24	35.0 37.0			CL	Soft to medium stiff, gray, lean CLAY (CL) with black streaks, mps < 1 mm, no odor, wet FV5, 35.4 to 36.0 ft: Raw torque=15/1 ft-lbs, Su=560/40 psf FV6, 36.4 to 37.0 ft: Raw torque=10/1 ft-lbs, Su=370/40 psf						100				

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A-TEST BORING-07-1 HA-LIB07-1R-PGR-06-03-09.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\34981 - RAND ROAD\0000\FIELD EXPLORATIONS\34981-000 HA10-1_HA10-13TB.GPJ 28 Sep 10

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA10-7(OW)
File No. 34981-000
Sheet No. 3 of 3

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
40	WOR WOR WOM WOM	S11 18	40.0 42.0			CL	Soft to medium stiff, gray, lean CLAY (CL) with black streaks, mps <1 mm, no odor, wet -MARINE DEPOSIT-						100				
45	WOR WOR WOM 1	S12 18	45.0 47.0			CL	Medium stiff, gray, lean CLAY (CL) with black streaks, mps <1 mm, no odor, wet, gray fine sand layer at 46.8 ft FV7, 45.4 to 46.0 ft: Raw torque=23/1 ft-lbs, Su=850/40 psf FV8, 46.0 to 46.8 ft: Raw torque=23/6 ft-lbs, Su=850/220 psf Note: Vane would not push past 46.8 ft. Drill action indicates probable sand layers from 47.0 to 50.0 ft.					5	95				
50	2 5 11 17	S13 20	50.0 52.0		50.7	CL	Very stiff, gray, lean CLAY (CL), mps 2.0 mm, no odor, wet				5	5	90				
						SM	Medium dense, gray, silty SAND (SM) with gravel, mps 0.50 in., well bonded, no odor, wet -GLACIAL TILL-		15	10	35	25	15				
					52.0		Bottom of Exploration at 52.0 ft Observation well installed in completed borehole. See Observation Well Installation Report for details. Note: FV indicates 2"x7" in-situ field vane shear test performed at depth interval shown.										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA10-7(OW)

H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-03-08.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\34981 - RAND ROAD\000\FIELD EXPLORATIONS\34981-000 HA10-1_HA10-13TB.GPJ 28 Sep 10

HALEY & ALDRICH

TEST BORING REPORT

Boring No. HA10-9

Project Rand Road Office Park Planned Unit Development, Portland, Maine
Client Woodard & Curran
Contractor Maine Test Borings

File No. 34981-000
Sheet No. 1 of 1
Start 10 August 2010
Finish 10 August 2010
Driller R. Leonard
H&A Rep. M. Snow

Elevation 67.0 (approx.)
Datum NGVD 29

Location
N 302,638.0
E 2,909,662.0

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	SSA	S	--	Rig Make & Model: Mobile B-53
Inside Diameter (in.)	--	1.375	--	Bit Type: Cutting Head
Hammer Weight (lb)	--	140	-	Drill Mud: None
Hammer Fall (in.)	--	30	-	Casing: SSA to 10.0 ft
				Hoist/Hammer: Winch / Safety Hammer
				PID Make & Model: NA

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 1 3 3	S1 18	0.0 2.0	0.3	OL/ OH	-FOREST MAT-										
				1.0	ML	Soft, gray-brown to dark brown, sandy SILT (ML) with roots, mps 0.42 mm, no odor, moist					40	60				
					SM	-TOPSOIL-					85	15				
	5 6 7 12	S2 18	2.0 4.0			Very loose, brown-gray, silty SAND (SM) with occasional organics, mps 0.42 mm, no odor, moist Similar to above except medium dense										
				3.4	ML/ CL	Stiff, gray-brown, mottled SILT (ML) to lean CLAY (CL), mps 0.42 mm, no odor, moist to wet					5	95				
	4 10 10 9	S3 19	4.0 6.0	4.0	SP- SM	Medium dense, brown-gray, mottled, poorly graded SAND with silt (SP-SM), occasional gray lean clay lenses, mps 0.42 mm, no odor, wet Note: Water encountered at approximately 4.0 ft. -MARINE DEPOSIT-					90	10				
5																
	4 3 7 4	S4 21	6.0 8.0	6.5	ML/ SM	Stiff, brown-gray, sandy SILT (ML) to loose, silty SAND (SM) with occasional gray, mottled, lean clay layers, mps 0.42 mm, no odor, wet					40	60				
	1 1 1 1	S5 24	8.0 10.0	8.3	CL	Very soft, gray, lean CLAY (CL), mps < 1 mm, no odor, wet -MARINE DEPOSIT-						100				
10				10.0		Bottom of Exploration at 10.0 ft Note: No refusal.										

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (ft)	10.0
Rock Cored (ft)	0.0
Samples	5S

Boring No. HA10-9

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None **Toughness**: L - Low M - Medium H - High **Plasticity**: N - Nonplastic L - Low M - Medium H - High **Dry Strength**: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

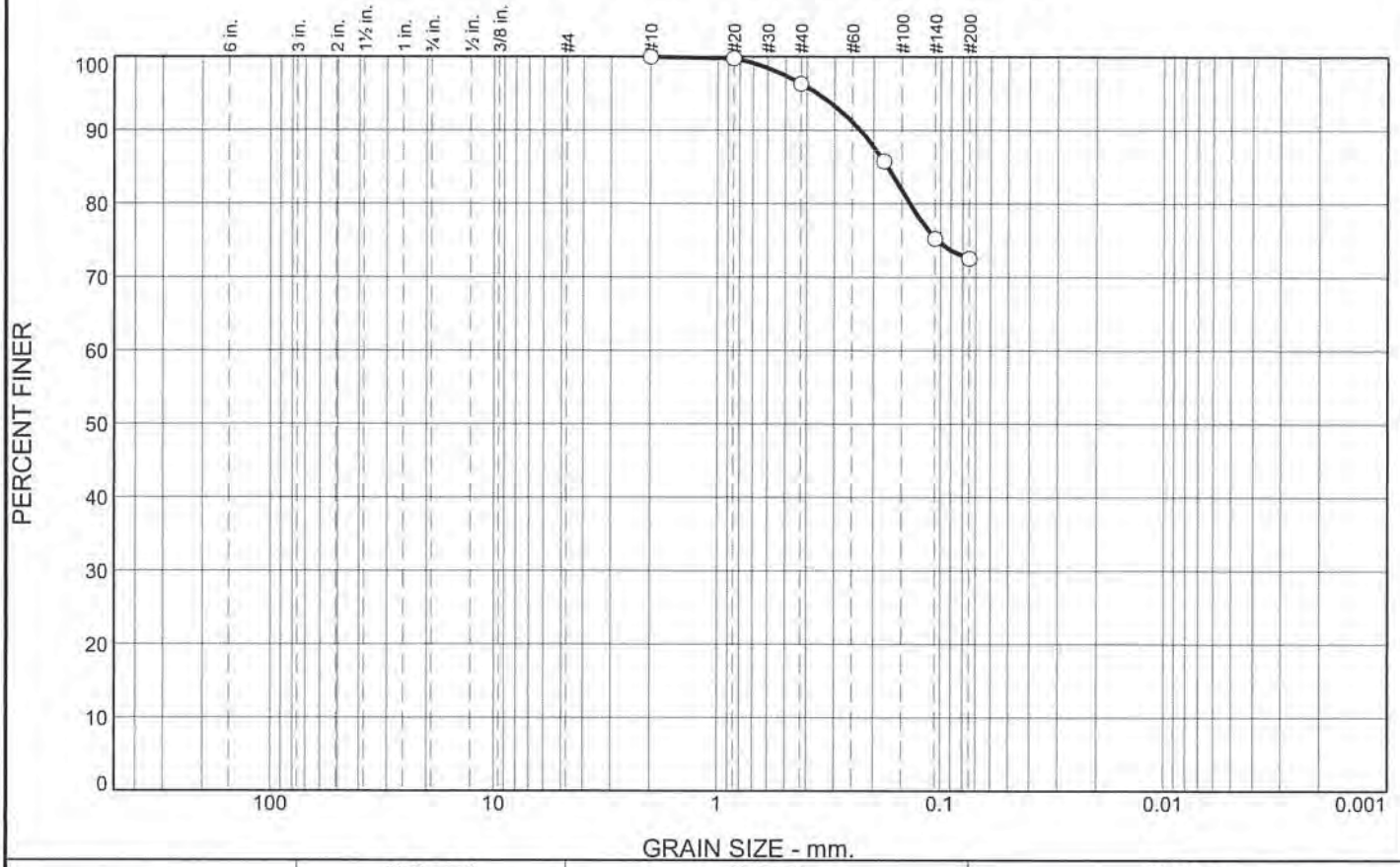
H&A-TEST BORING-07-1 HA-LIB07-1R-POR-06-03-09.GLB HA-TB+CORE+WELL-07-1.GDT G:\PROJECTS\34981 - RAND ROAD\000\FIELD EXPLORATIONS\34981-000 HA10-1_HA10-13TB.GPJ 28 Sep 10

APPENDIX D

LABORATORY TEST RESULTS

Geotechnical Engineering Services
Proposed Patrons Oxford Insurance Company Office Building
Portland, Maine

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	3.6	23.9	72.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.8		
#40	96.4		
#80	85.8		
#140	75.3		
#200	72.5		

* (no specification provided)

Soil Description

silt with sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.1731 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Moisture Content: 24.5%

Sample No.: S-2 **Source of Sample:** B-3 **Date:** 8/24/15
Location: Portland, ME **Elev./Depth:** 5'-7'

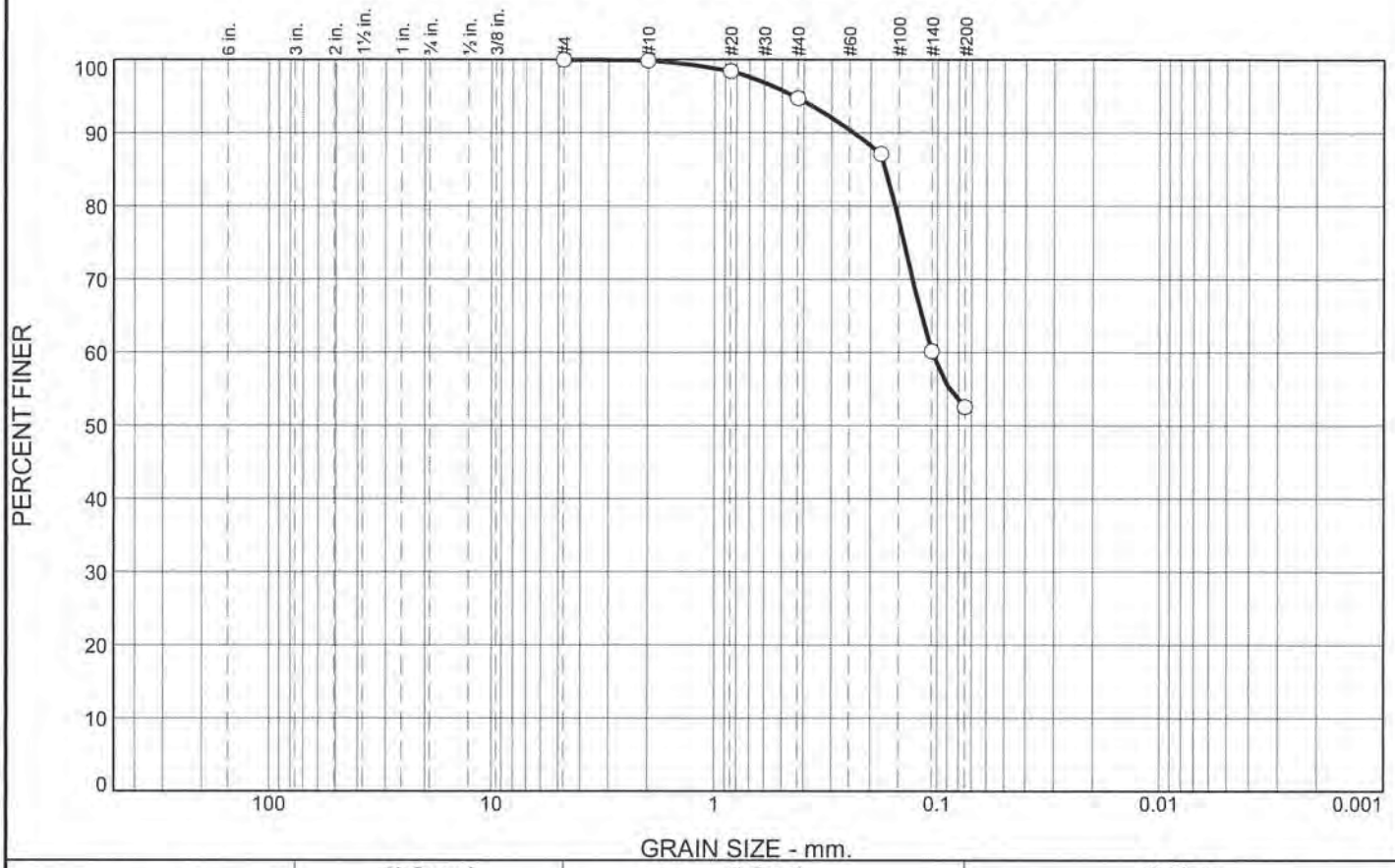
R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Patrons Oxford Insurance Inc.
Project: Proposed Patrons Oxford Insurance Building

Project No: 1518-002 **Lab No.** 13687a

Tested By: JMB **Checked By:** MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	5.1	42.3	52.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	98.4		
#40	94.8		
#80	87.1		
#140	60.2		
#200	52.5		

* (no specification provided)

Soil Description

sandy silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.1714 D_{60}= 0.1056 D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Moisture Content: 27.6%

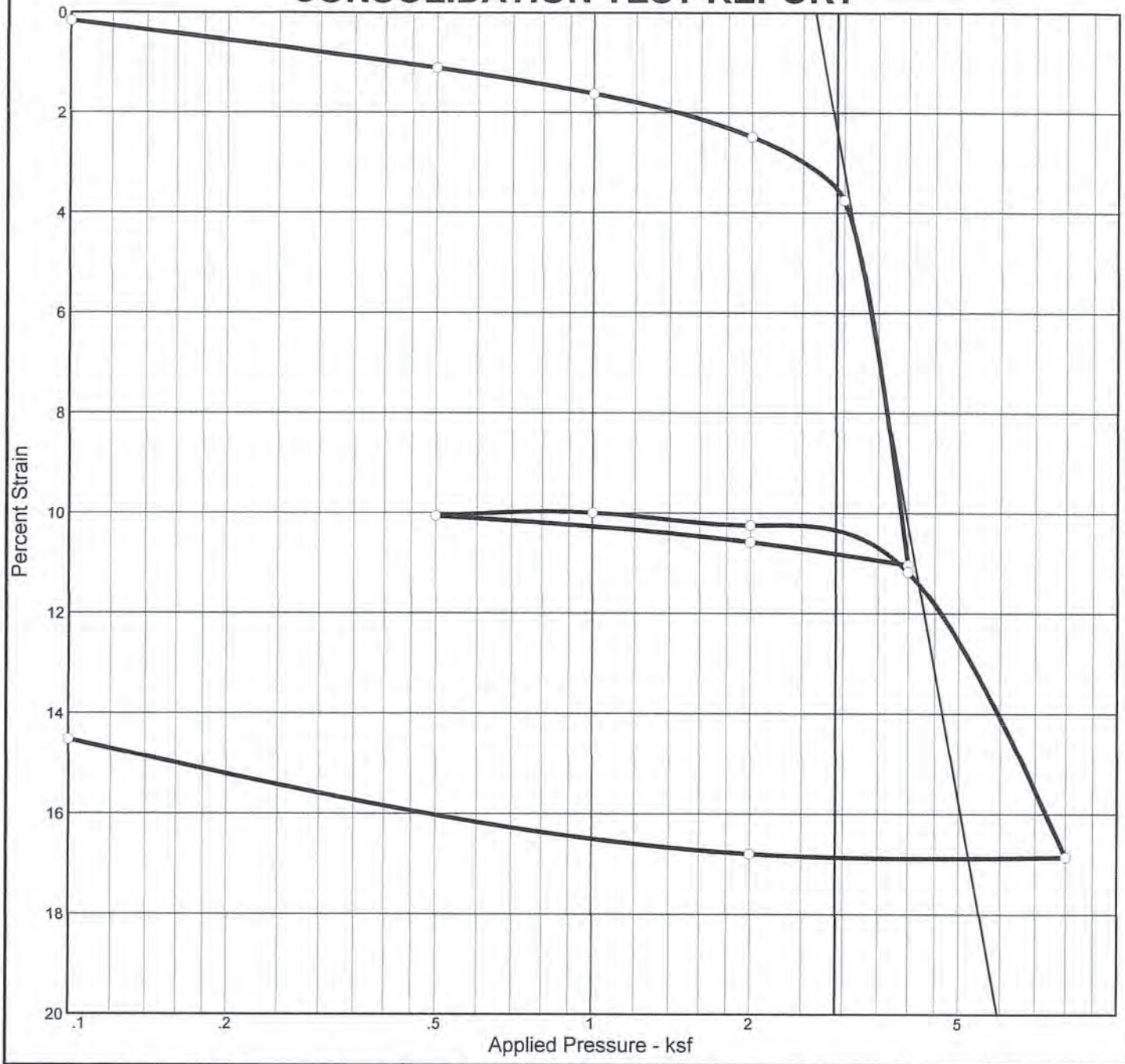
Sample No.: S-2 **Source of Sample:** B-6 **Date:** 8/24/15
Location: Portland, ME **Elev./Depth:** 5'-7'

R.W. Gillespie & Associates, Inc.
Saco, Maine

Client: Patrons Oxford Insurance Inc.
Project: Proposed Patrons Oxford Insurance Building
Project No: 1518-002 **Lab No.** 13687b

Tested By: JMB **Checked By:** MTG MTG

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
96.5 %	46.5 %	73.9			2.76		3.06	1.32	0.03	1.331

MATERIAL DESCRIPTION	USCS	AASHTO
Silty Clay		

Project No. 1518-002 **Client:** Patrons Oxford Insurance Inc.

Project: Proposed Patrons Oxford Insurance Building

Source: B-8 **Sample No.:** U-1 **Elev./Depth:** 15-17'

R.W. Gillespie & Associates, Inc.

Saco, Maine

Remarks:

Tested By: JMB

Lab No. 13662

Laboratory Vane Shear Test Results

ASTM D4648 Standard Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Clayey Soil

Project: Proposed Patrons Oxford Insurance Building
Client: Patrons Oxford Insurance
Project No.: 1518-002
Location: Portland, ME
Date: 7/27/2015
Test Depth: 15 to 17

Boring/Sample No.		B-8, U-1			Lab No.	13662	
Test No.	Test Depth (ft)	Vane Size	Max. Torque (Undisturbed) (kg-cm)	Max. Torque (Remolded) (kg-cm)	Undrained Shear Strength (psf)	Undrained Shear Strength (psf)	Moisture Content
1	15.1	L	34	0	355	0	47%
2	15.35	L	38	0	397	0	46%
3	16.3	L	30	0	313	0	47%
4	16.55	L	32	0	334	0	46%

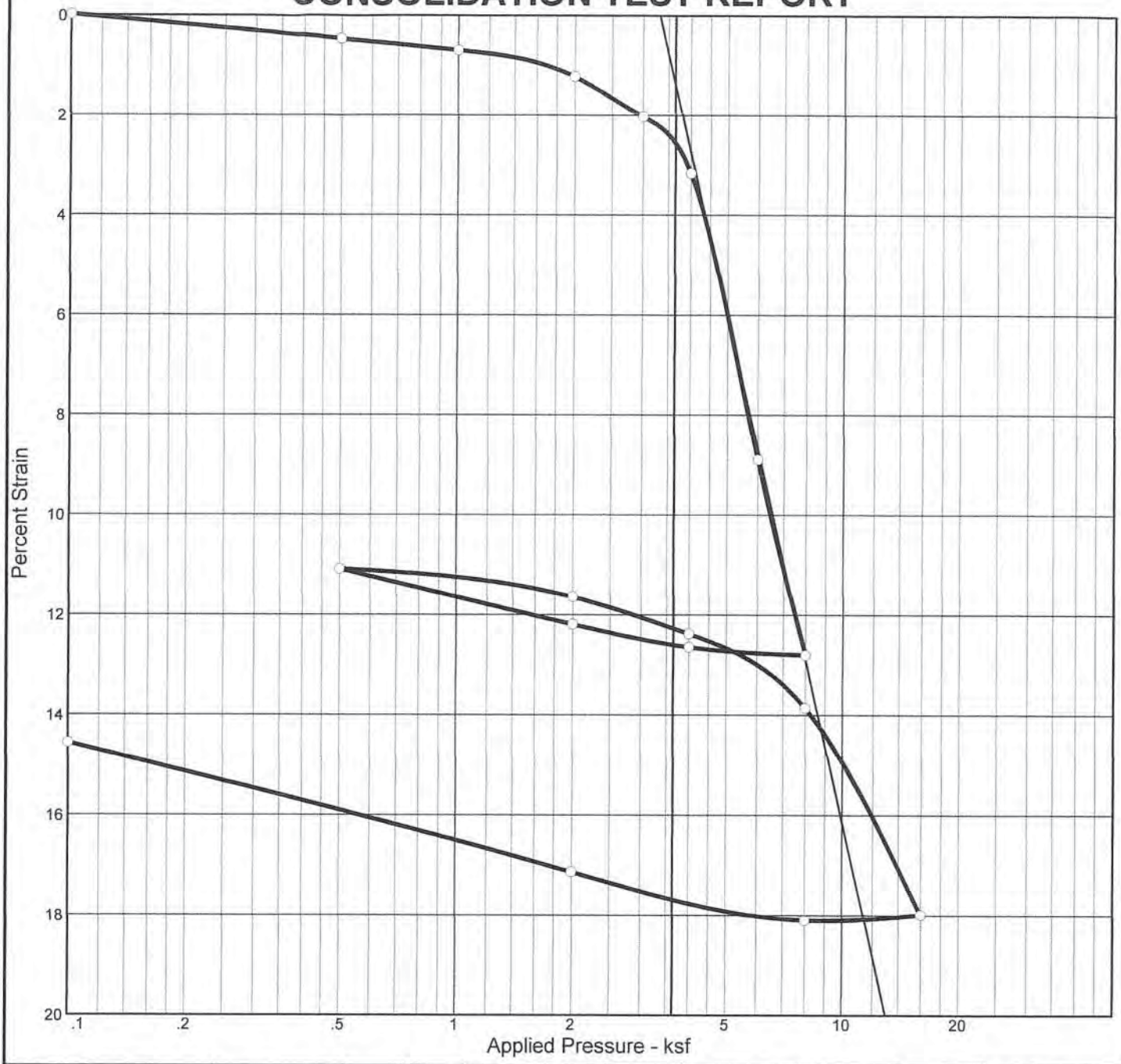
Vane Size	
	(mm)
S	16 x 32
M	20 x 40
L	24.5 x 50.8

Tested By: JMB
Checked By: MTG

R.W. Gillespie & Associates

86 Industrial Park Rd., Suite 4, Saco ME 04072, 207-286-8008 / 200 International Dr., Suite 170, Portsmouth NH 03801, 603-427-0244

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
101.1 %	47.3 %	75.2			2.76		4.01	0.77	0.04	1.291

MATERIAL DESCRIPTION	USCS	AASHTO
Silty Clay		

Project No. 1518-002 **Client:** Patrons Oxford Insurance Inc.

Project: Proposed Patrons Oxford Insurance Building

Source: B-8 **Sample No.:** U-2 **Elev./Depth:** 30-32'

R.W. Gillespie & Associates, Inc.

Saco, Maine

Remarks:

Tested By: JMB

Lab No. 13663

Laboratory Vane Shear Test Results

ASTM D4648 Standard Test Method for Laboratory Miniature Vane Shear Test for Saturated Fine-Grained Clayey Soil

Project: Proposed Patrons Oxford Insurance Building
Client: Patrons Oxford Insurance
Project No.: 1518-002

Location: Portland, ME
Date: 7/27/2015
Test Depth: 30' to 32'

Boring/Sample No.		B-8, U-2			Lab No.	13663	
Test No.	Test Depth (ft)	Vane Size	Max. Torque (Undisturbed) (kg-cm)	Max. Torque (Remolded) (kg-cm)	Undrained Shear Strength (psf)	Undrained Shear Strength (psf)	Moisture Content
1	30.2	L	48	0	501	0	47%
2	30.45	L	46	0	480	0	45%
3	31.2	L	48	0	501	0	44%
4	31.45	L	32	0	334	0	45%

Vane Size	
	(mm)
S	16 x 32
M	20 x 40
L	24.5 x 50.8

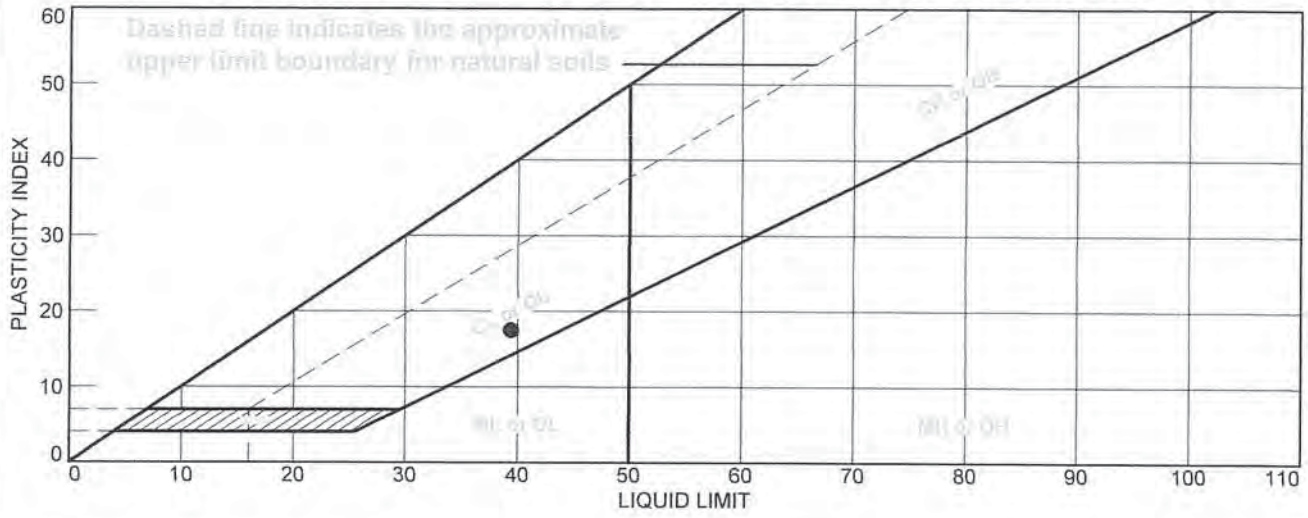
Tested By: JMB

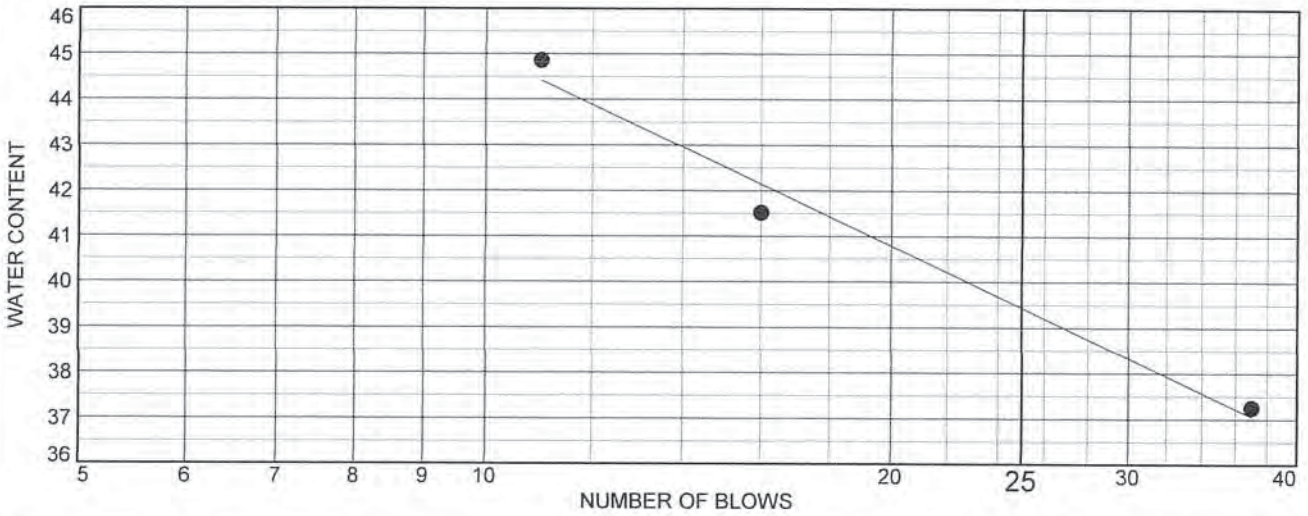
Checked By: MTG

R.W. Gillespie & Associates

86 Industrial Park Rd., Suite 4, Saco ME 04072, 207-286-8008 / 200 International Dr., Suite 170, Portsmouth NH 03801, 603-427-0244

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty Clay	39.4	21.9	17.5			

Project No. 1518-002 **Client:** Patrons Oxford Insurance Inc.

Project: Proposed Patrons Oxford Insurance Building

● **Source of Sample:** B-8 **Depth:** 15-17' **Sample Number:** U-1

Remarks:

R.W. Gillespie & Associates, Inc.

Saco, Maine

Lab No. 13736

Tested By: JMB **Checked By:** MTG

APPENDIX E

REPORT OF CROSSHOLE SEISMIC TESTING BY HAGER-RICHTER GEOSCIENCE, INC.

Geotechnical Engineering Services
Proposed Patrons Oxford Insurance Company Office Building
Portland, Maine

HAGER-RICHTER
GEOSCIENCE, INC.

CROSSHOLE SEISMIC TESTING
LOT 4 - PORTLAND TECHNOLOGY PARK
PORTLAND, MAINE

Prepared for:

R.W. Gillespie & Associates, Inc.
86 Industrial Park Road, Suite 4
Saco, Maine 04072

Prepared by:

Hager-Richter Geoscience, Inc.
8 Industrial Way, D10
Salem, New Hampshire 03079

File 15J69
October, 2015

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Crosshole Seismic Testing
Lot 4 - Portland Technology Park
Portland, Maine
File 15J69 October, 2015

0. EXECUTIVE SUMMARY

Hager-Richter Geoscience, Inc. (Hager-Richter) conducted crosshole seismic testing in one two-borehole array at the Lot 4 site located at the Portland Technology Park in Portland, Maine for R.W. Gillespie & Associates, Inc. (RWG) in September, 2015. The crosshole seismic testing is part of geotechnical investigations for future development. The testing was conducted in accordance with ASTM D4428/D4428 M-07 "Standard Test Methods for Crosshole Seismic Testing."

The objective of the crosshole seismic testing was to determine shear wave velocity (V_s) as a function of depth at the specified location for the determination of seismic site class.

On the basis of the crosshole seismic testing conducted in a two-borehole array at the Lot 4 site located at the Portland Technology Park in Portland, Maine we conclude that the velocity of shear waves, (Vs) varies with depth, Z, as tabulated in Table 1, and as follows:

Z (ft)	V_s (ft/s)	Comments
2.5 - 8.5	15.362 * Z + 540.32	N = 3, r^2 =.99
8.5 - 57	8.0266 * Z + 241.03	N = 16, r^2 = 0.94
57- 68.5	5264	N = 6, Std 85 ft/s, 1.6% mean

The average velocity of shear waves for the upper 100 ft, assuming bedrock velocity to 100 ft depth is the same as the model value determined for the interval 57 - 68.4 ft, was determined to be 804 ft/s, and corresponds to Seismic Site Class D based solely on the on average shear wave velocity table in the IBC.

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APPENDICES

1 Boring Logs for B-101A and B-101B
2 Deviation Data

1. INTRODUCTION

Hager-Richter Geoscience, Inc. (Hager-Richter) conducted crosshole seismic testing in one two-borehole array at the Lot 4 site located at the Portland Technology Park in Portland, Maine for R.W. Gillespie & Associates, Inc. (RWG) of Saco, Maine, in September, 2015. The crosshole seismic testing is part of geotechnical investigations for future development. The project site is located southeast of the Interstate 95 - State Route 25 Interchange on an unnamed access road. The general location of the Site is shown in Figure 1. The testing was conducted in accordance with ASTM D4428/D4428 M-07 "Standard Test Methods for Crosshole Seismic Testing."

The two boreholes were designated by RWG as GB-101 and GB-102, and both were terminated in bedrock at 72 feet below ground surface. Bedrock at this location is mapped as the Vassalboro Formation according to the Bedrock Geologic Map of Maine. The approximate locations of the boreholes are shown in Figure 2. The boring logs are included in Appendix 1, and report the stratigraphy penetrated by the borings from surface downward as follows:

GB-101
2 feet of fill
7 feet of silty sand
38 feet of silty clay
10 feet of silty sand
bedrock of the Vassalboro Fm,
encountered at 57 feet

GB-101
4 inches of soil
8.5 feet of silty sand
36 feet of silty clay
10.5 feet of silty sand
bedrock of the Vassalboro Fm,
encountered at 57.5 feet

The objective of the crosshole seismic testing was to determine the velocity of shear waves as a function of depth and for the determination of seismic site class.

The crosshole seismic testing was conducted on September 24, 2015 by Michael Howley, P.G., and Bryan Carnahan of Hager-Richter. The project was coordinated with Mr. Chris Morrell, of RWG, who was present for the duration of the field work. Field work and subsequent data processing were performed in accordance with ASTM D4428/D4428 M-07 "Standard Test Methods for Crosshole Seismic Testing." The project records will be kept for a minimum of three years.

2. CROSSHOLE SEISMIC TESTING

2.1 General

As noted in the Introduction, the testing was performed in substantial conformance with ASTM D4428/D4428 M-07 "Standard Test Methods for Crosshole Seismic Testing."

2.2 Field Procedures

The two-borehole method was used. The ASTM document specifies the construction details of the boreholes, including a requirement for grouting the casing from bottom to top. The grout provides a path for the elastic signals from the source to the borehole wall in one borehole and from the borehole wall to the geophone in one or more other boreholes. The displacement of each borehole from its location on the surface was measured with a deviation probe, providing the data necessary to calculate the distance between the boreholes.

The geometry of the testing system is shown in Figure 3. The source and geophone are positioned at the same elevation. The source generates a seismic signal that travels as an elastic wave to the geophones, where it is converted to an electric signal, sent to the seismograph via cable, and amplified, filtered, and recorded by the seismograph. Figure 4 is a photograph that shows the physical setup for the testing in the field.

The seismograph is a 24-channel seismograph (Geometrics Geode), coupled to a down-hole geophone assembly. The downhole geophone assembly includes a Mark Products triaxial geophone and a mechanical clamping mechanism to secure the assembly to the inside of the casing. The vertical axis of the geophone is oriented vertically (because it is constrained by the borehole), and the horizontal axes are oriented such that one axis is parallel to the direction source-to-receiver and the other axis is perpendicular to that direction. The seismograph records data digitally and the records are available immediately to verify the quality of the data.

The source is a downhole hammer that produces primarily a vertically polarized shear wave but also a compressional wave. The direction of first motion of the shear wave can be reversed, thereby facilitating recognition of the onset of the shear waves at the geophone(s). The number of stacks per shot depth/direction is variable, and the quality of the stacked seismic signal for each shot depth/direction is verified in the field.

The deviation probe is a Mount Sopris downhole tool 2DVA-1000 that was operated with a Mount Sopris MGX-2 portable logger. The downhole tool includes a 3-axis magnetometer and three accelerometers. The manufacturer's stated accuracy is Azimuth ±1° and Inclination

±0.3°. Additional specifications and the manual for the deviation probe are available on the website www.mountsopris.com.

2.3 Data Analysis

2.3.1 Velocity. The seismic data are analyzed using the digital data and commercially available software. The arrival times for the shear and compressional waves at each geophone are determined from the digital seismic data. The *apparent*[1] velocities are calculated for each depth from the arrival times and the distances between the boreholes as follows:

$$V_S\,(S\text{-}R) = L\,(S\text{-}R)\,/\Delta T_S\,(S\text{-}R) \qquad \text{Eq 2.3-1}$$
$$V_P\,(S\text{-}R) = L\,(S\text{-}R)\,/\Delta T_P\,(S\text{-}R) \qquad \text{Eq 2.3-2}$$

where:

V is the velocity, with subscripts S and P indicating shear and compressional waves, respectively,
L (S-R) is the distance between borings containing the Source and Receiver;
ΔT (S-R) is the time of transit of elastic energy from the Source to Receiver, averaged for source up and down, and with subscripts as defined for V.

The assumptions inherent in Equations 1 and 2 are that the medium is isotropic and homogeneous within layers, the interface between layers is horizontal, and the displacements are small.

The velocities determined with Equations 1 and 2 are *apparent* velocities. The actual velocities would be determined by correcting for the effects of refraction, if refraction is present, using Snell's Law, which for any two layers is given by

$$\text{SIN}\ \alpha_1/\text{SIN}\ \alpha_2 = V_1/V_2 \qquad \text{Eq 2.3-3}$$

where
α_1 is the angle of incidence,
α_2 is the angle of the refracted wave, and
V_1 and V_2 are the velocities of layers 1 and 2, respectively.

[1] Apparent velocity is the distance between the source and the receiver divided by the time required for the seismic signal to travel from the source to the receiver.

2.4 Determination of Average Shear Wave Velocity for Building Code Purposes.

The Building Code uses the average shear wave velocity averaged over the upper 100 ft as one method to determine Seismic Site Class. The average velocity V_{avg} is defined as follows:

$$V_{avg} = \left(\sum_{i=1}^{N} d_i\right) / \sum_{i=1}^{N} d_i / V_i \qquad \text{Eq. 2.4 -1}$$

where V_{avg} is average shear wave velocity
d_i is thickness of the i^{th} layer
V_i is the shear wave velocity of the i^{th} layer
N is the number of layers

Equation 2.4-1 assumes that the velocity is constant in each layer. Such, however, is not always the case, and a function of the form Y = a * X + b often fits the observed data well. For sections in which the velocity varies as Y = a * X + b, the denominator of Eq 2.4-1 can be replaced with the following integral:

$$\int_{Z1}^{Z2} dZ / (aZ + b) = [Ln(aZ_2 + b) - Ln(aZ_1 - b)] / a$$

where Z_1 and Z_2 are the depths of top and bottom of the layer in which the velocity varies as Y = a * X + b.

The Site Class, based on average shear wave velocity, is defined as follows:

Site Class	Soil Profile Name	Soil Shear Wave Velocity (ft/s)
A	Hard rock	$v_s > 5000$
B	Rock	$2500 < v_s \leq 5000$
C	Very dense soil and soft rock	$1200 < v_s \leq 2500$
D	Stiff soil profile	$600 \leq v_s \leq 1200$
E	Soft soil profile	$v_s < 600$

Although the IBC provides other methods to determine the Site Class, such as standard penetration resistance (blow counts) and soil undrained shear strength, this report uses only the method based on shear wave velocity. Furthermore, there is no consideration of other factors that may affect a site such as liquefaction. The final determination of seismic site class should be made by the project engineer.

2.5 Limitations of the Method

Like all geophysical methods, the crosshole seismic method is based on the assumption that the local geology is uncomplicated, and that rock and soil interfaces are planar. For those tests in which the signals are generated in a single boring only, the interfaces are assumed to be horizontal, and this assumption is inherent in correcting for refraction.

Thin units with velocities that are lower than the velocity of adjacent materials may not be detectable with the geometry of a particular installation. (The details important to this limitation are the velocities of adjacent materials, thickness of the units, and the distances as functions of depth between arrays.)

If deviation measurements are not available, then the distance between boreholes is *assumed* to be constant from the surface to the bottom of the boreholes. Although ASTM D4428 does not require deviation measurements to be made for borings with depths less than 50 ft, we have measured departures from vertical of several feet in borings that were only 30 ft deep.

If the casing in each borehole is not grouted in accordance with ASTM D4428, or the grout is not continuous, then the signal may be significantly degraded for at least some depths. The practical result is that the velocity determined under such conditions is less accurate at best, and in some cases may not be determinable. The acoustic noise in the subsurface can be a significant problem, particularly at active construction sites, and may interfere with the signals generated in the crosshole seismic testing. Drilling, pile driving, and the activity of heavy construction equipment have been especially troublesome at some sites.

2.6 Site Specific

The borings were reportedly constructed in accordance with the recommendations of ASTM D4428/D4428 M-07 "Standard Test Methods for Crosshole Seismic Testing." A deviation survey was performed by Hager-Richter in the two borings, and the data are given in Appendix 3. The distances between the boreholes for the crosshole testing were determined as a function of depth from the surface, and are reported in Table 1 and shown in Figure 5.

The maximum changes in separation of source and receiver boreholes was 1.4 feet, corresponding to 10.7 % of the distance between the boreholes on the surface (13.08 feet).

Crosshole seismic data were obtained at intervals of 2.5 feet from 2.5 to 67.5 feet depth, with an additional measurement at 68.5 feet depth. No more than 10 stacks of the seismic signals were required to increase the signal-to-noise ratio to an acceptable value.

3. RESULTS AND DISCUSSION

3.1 General

As discussed above, the measured seismic velocities are *apparent* velocities. The distances between borings and the apparent shear wave velocities are reported in Table 1 and are plotted as functions of depth in Figures 5 and 6, respectively.

As noted above, the boreholes were designated by RWG as GB-101 and GB-102, and both were terminated at 72 feet below ground surface. The approximate locations of the boreholes are shown in Figure 2 and Figure 4 is a photograph showing the test setup. The boring logs are included in Appendix 2, and report the stratigraphy penetrated by the borings from surface downward as follows:

GB-101	GB-101
2 feet of fill	4 inches of soil
7 feet of silty sand	8.5 feet of silty sand
38 feet of silty clay	36 feet of silty clay
10 feet of silty sand	10.5 feet of silty sand
bedrock,	bedrock,
encountered at 57 feet	encountered at 57.5 feet

The total depth available for the crosshole seismic testing was 72.0 feet.

3.2 Data Quality

The quality of seismic data is evaluated on the basis of the signal-to-noise (S/N) ratio and the ease with which the onset of the signal can be recognized visually. Only the initial arrival times are used in crosshole seismic testing. The noise for the shear wave (S-wave) includes not only ambient noise but noise due to the P-wave, which always arrives before the S-wave and its wave train continues for a finite time after the arrival of the S-wave. Recognition of the onset of the shear wave is improved significantly by recording and superimposing shear waves that are oppositely polarized.

The quality of seismic data acquired for this project is judged to be good to excellent with the exception of the data for the interval near and in bedrock, 55 - 68.5 ft, where the quality is judged to be poor-fair. The composite plot of the shear wave seismograms is shown in Figure 7. Reversed shear wave arrivals, generated by stacking the downhole source in opposing directions

at each depth, are evident in the seismogram, and are especially well developed in the overburden section between about 25 and 40 feet bgs.

3.3 Refraction Effects

As noted in section 2.3, the velocity obtained by dividing the distance between borings by the time required for the signal to travel between the borings, called *apparent* velocity, may not be the true velocity, especially where the source and receiver are located at a depth near an interface between two materials with different velocities and/or the distance between borings is large. The difference between apparent and true velocity is due to refraction. At some sites, even in the presence of refraction, the direct wave can be recognized and its time used to determine the velocity of the material with the slower velocity.

Examination of the apparent shear wave velocity data in Table 1 shows large velocity changes at the interface between the upper silty sand and silty clay between depths of 7.5 and 12.5 feet and at the interface between the silty sand and bedrock between depths of 50 and 57.5 feet. Based on modeling of the data using the measured velocities above and below the interfaces, we have determined that the apparent velocities at depths 10 feet, 52.5 feet, and 55 feet are due to refractions and are so noted on Table 1.

3.4 Results

As noted above, the distances between borings and the apparent shear wave velocities are reported in Table 1 and are plotted as functions of depth in Figures 5 and 6, respectively.

Our models of the velocities of shear (V_s) waves consist of two simple functions: (1) Y = C, where C is a constant determined by averaging, and (2) Y = A*X + B, where A and B are constants determined by least squares for individual segments. The model for shear wave velocities is given in Table 2. The shear wave model is shown graphically in Figure 9.

Using the model velocities of shear waves as given in Table 2 – and assuming the bedrock velocity to 100 ft depth is the same as the model value determined for the interval 57 - 68.5 ft – and Eq. 2.4 -1 of Section 2.4, the average velocity of shear waves for the upper 100 ft, Vs_{100}, was determined to be 804 ft/s, and corresponds to Seismic Site Class D based solely on the average shear wave velocity table in the IBC.

4. CONCLUSIONS

On the basis of the crosshole seismic testing conducted in a two-borehole array at the Lot 4 site located at the Portland Technology Park in Portland, Maine we conclude that the velocity of shear waves, (Vs) varies with depth, Z, as tabulated in Table 1, and as follows:

Z (ft)	V_s (ft/s)	Comments
2.5 - 8.5	15.362 * Z + 540.32	N = 3, r^2 =.99
8.5 - 57	8.0266 * Z + 241.03	N = 16, r^2 = 0.94
57- 68.5	5264	N = 6, Std 85 ft/s, 1.6% mean

The average velocity of shear waves for the upper 100 ft, assuming bedrock velocity to 100 ft depth is the same as the model value determined for the interval 57 - 68.4 ft, was determined to be 804 ft/s, and corresponds to Seismic Site Class D based solely on the on average shear wave velocity table in the IBC.

5. LIMITATIONS

This report was prepared for the exclusive use of R.W. Gillespie & Associates, Inc. and its client. Any use by any third party of this Report or any information, documents, records, data, interpretations, advice or opinions given to the Client by Hager-Richter Geoscience, Inc. in the performance of its work shall be at such third party's own risk and without any liability to Hager-Richter Geoscience, Inc.

Hager-Richter Geoscience, Inc. has performed its professional services, obtained its findings, and made its conclusions in accordance with generally accepted and customary principles and practices in the field of geophysics. No other warranty, either expressed or implied, is made. Hager-Richter Geoscience, Inc. is not responsible for the independent conclusions, opinions, or recommendations made by others based on the information, geophysical data, and interpretations presented in this report.

This geophysical testing included a limited set of data obtained at the project Site and was conducted with limited knowledge of the Site and its subsurface conditions. Hager-Richter Geoscience, Inc. does not assume responsibility for the accuracy of information that was provided to us by others about the Site and its subsurface conditions. The findings provided by Hager-Richter Geoscience, Inc. are based solely on the information described in this document. The conclusions drawn from this investigation are considered reliable; however, there may exist localized variations in subsurface conditions that have not been completely defined at this time. It should be noted that our conclusions might be modified if subsurface conditions were better delineated with additional subsurface exploration including, but not limited to, coring and laboratory testing.

TABLE 1

DISTANCE BETWEEN BOREHOLES AND APPARENT VELOCITIES

Depth (ft)	Source-Receiver Distance (ft)	Shear Wave Travel Time (ms)	Apparent Shear Wave Velocity (ft/s)
2.5	13.08	22.50	581
5	13.10	21.41	612
7.5	13.11	19.93	658
10	13.13	23.52	558*
12.5	13.16	34.99	376
15	13.20	36.44	362
17.5	13.24	37.56	352
20	13.28	35.82	371
22.5	13.32	32.33	412
25	13.37	30.49	438
27.5	13.42	28.56	470
30	13.46	27.36	492
32.5	13.52	26.64	507
35	13.57	25.80	526
37.5	13.62	25.08	543
40	13.67	24.71	553
42.5	13.73	22.32	615
45	13.78	21.77	633
47.5	13.83	21.85	633
50	13.88	23.70	586
52.5	13.94	18.92	737*
55	14.00	10.04	1394*
57.5	14.07	2.68	5258
60	14.14	2.71	5219
62.5	14.22	2.69	5293
65	14.32	2.73	5238
67.5	14.44	2.67	5413
68.5	14.48	2.81	5162

*Apparent velocity due to refraction effects.

TABLE 2
MODEL VELOCITIES

Z (ft)	V_s (ft/s)	Comments
2.5 - 8.5	15.362 * Z + 540.32	N = 3, r^2 =.99
8.5 - 57	8.0266 * Z + 241.03	N = 16, r^2 = 0.94
57- 68.5	5264	N = 6, Std 85 ft/s, 1.6% mean

Abbreviations:

N = Number of data points used
r^2 = Coefficient of determination
Std = Standard Deviation



N

H-R

APPROXIMATE SCALE (feet)

0 1000 2000

ME

LOCATION

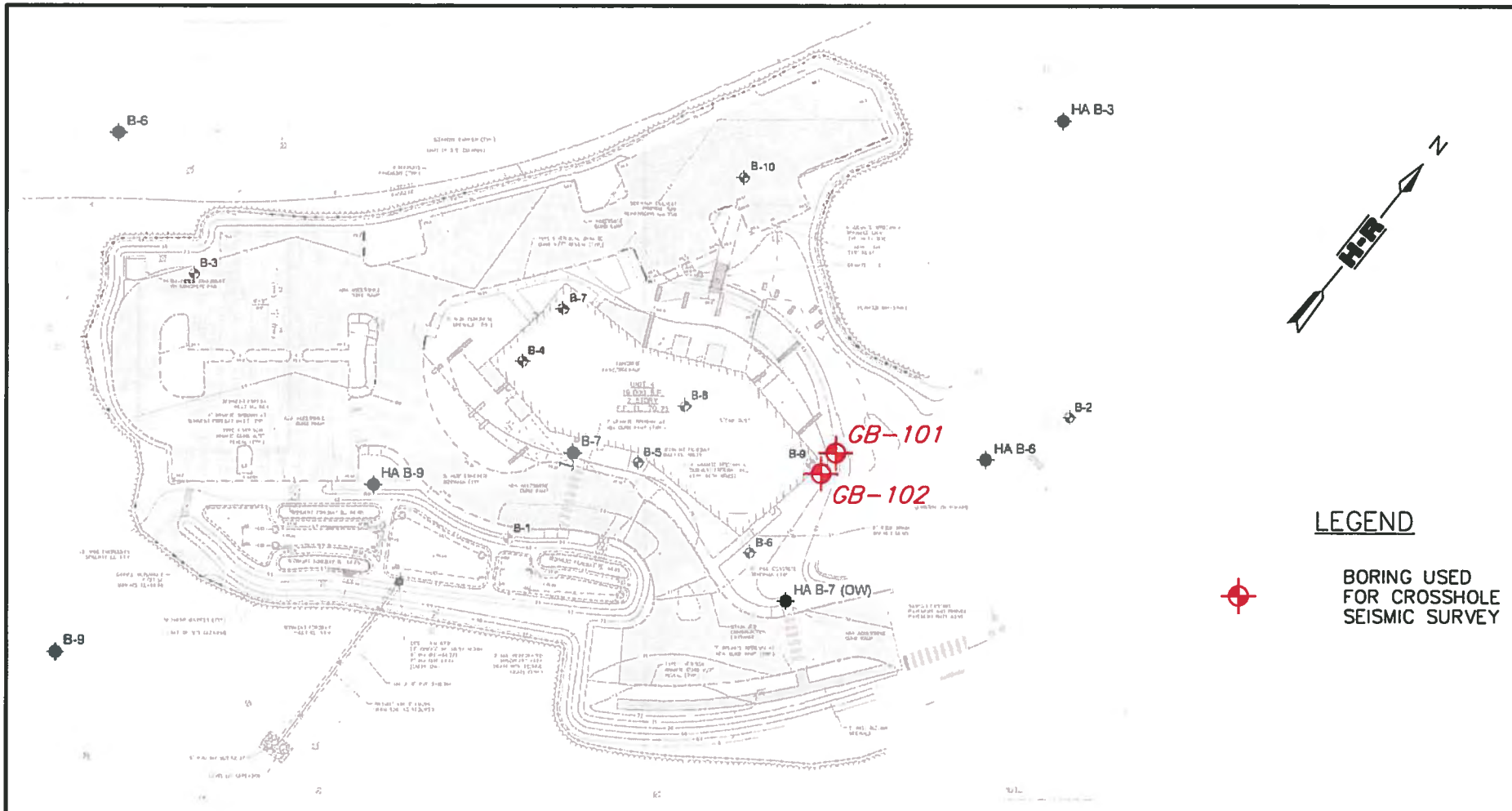
NOTE:

Modified from Google Earth Pro aerial photograph.

Figure 1
General Site Location
Lot 4 – Portland Technology Park
Portland, Maine

File 15J69	October, 2015

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



NOTE:

Modified from site plan provided by R.W. Gillespie & Associates, Inc., identified as FIG 2 ELP 1518-002.pdf.

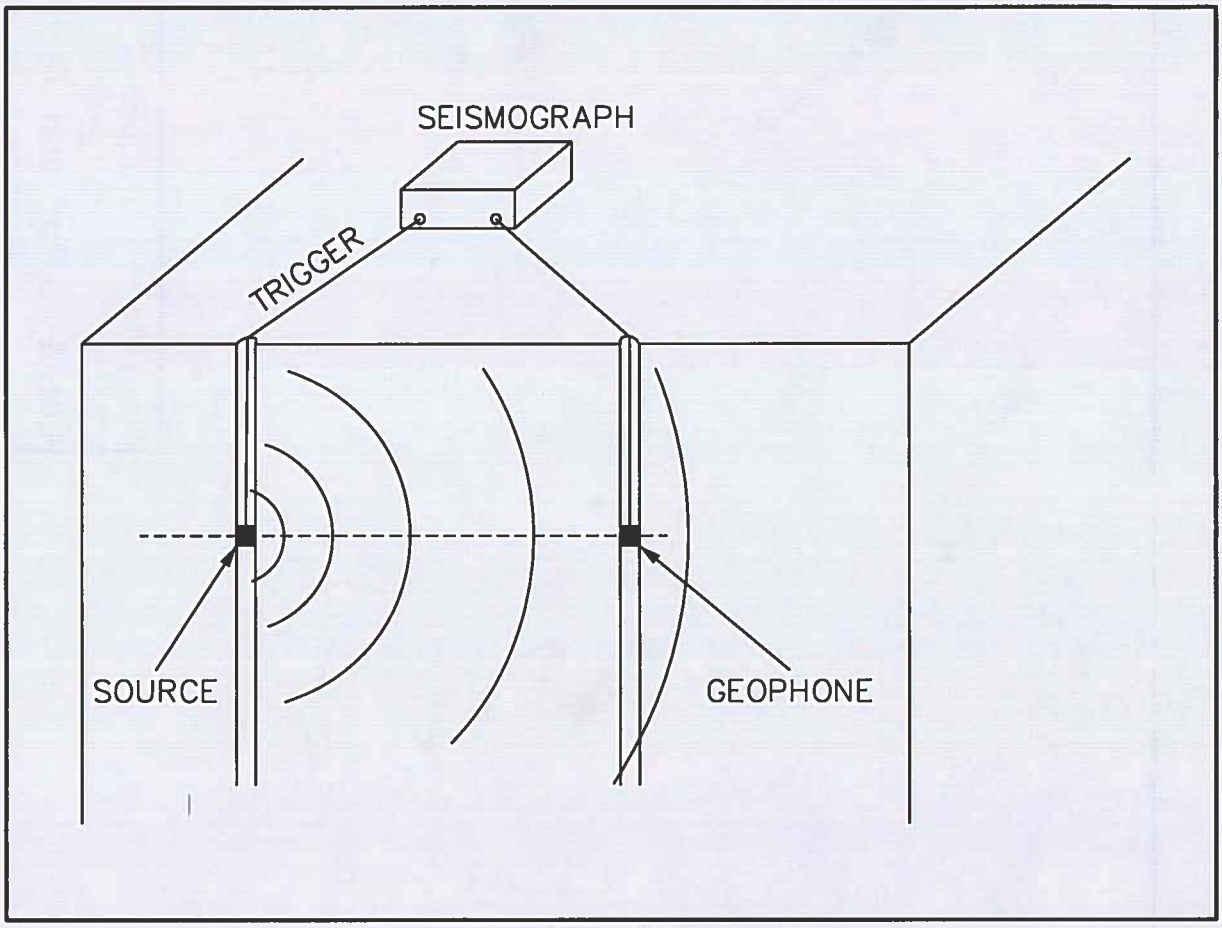
SCALE (feet)

0 80 160

Figure 2
Site Plan
Lot 4 – Portland Technology Park
Portland, Maine

File 15J69	October, 2015

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



NOT TO SCALE

NOTE:

The source and receiver are placed at the same depths in different borings. A horizontally polarized shear wave is generated by the source, radiates in all directions, travels at the speed determined by the elastic properties and density of the soils, and is detected by the geophone in the receiver boring. When the wave is initiated, a signal is transmitted to the seismograph to start a timing clock, and the wave is recorded as a function of time in the seismograph.

Figure 3
Survey Geometry
Lot 4 – Portland Technology Park
Portland, Maine

File 15J69	October, 2015

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire

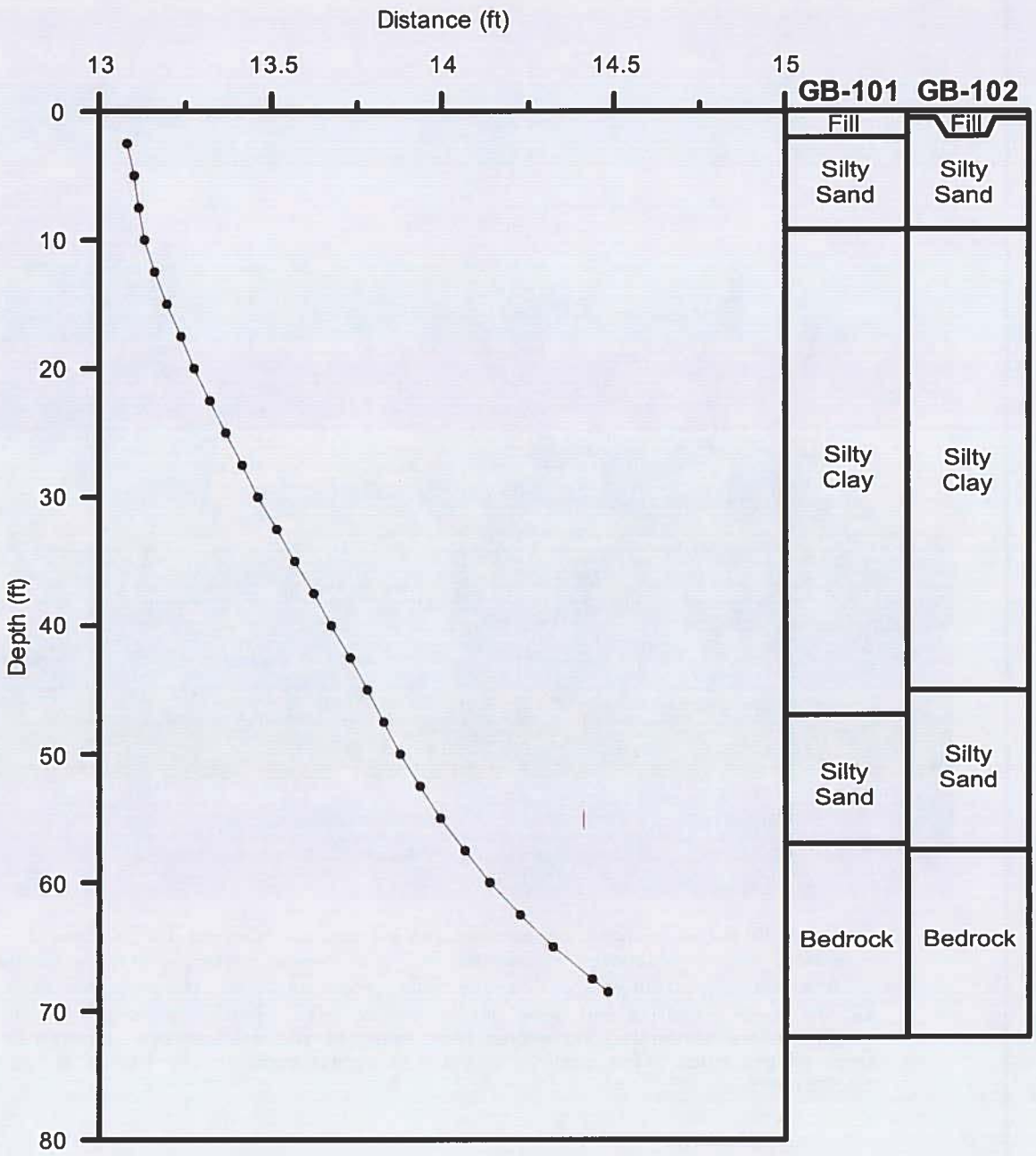


Photograph showing crosshole seismic testing setup. View to the northeast. The downhole source is located in borehole GB–102 (white casting with blue air hose in foreground, bottom left). The downhole geophone is located in borehole GB–101 (white casting with pink ribbon, center left). Both seismic source and geophone are connected via cables (not seen) to the seismograph, located in the back of the truck. The partially completed access road to the site is in the background.

Figure 4
Site Photo
Lot 4 – Portland Technology Park
Portland, Maine

File 15J69	October, 2015

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



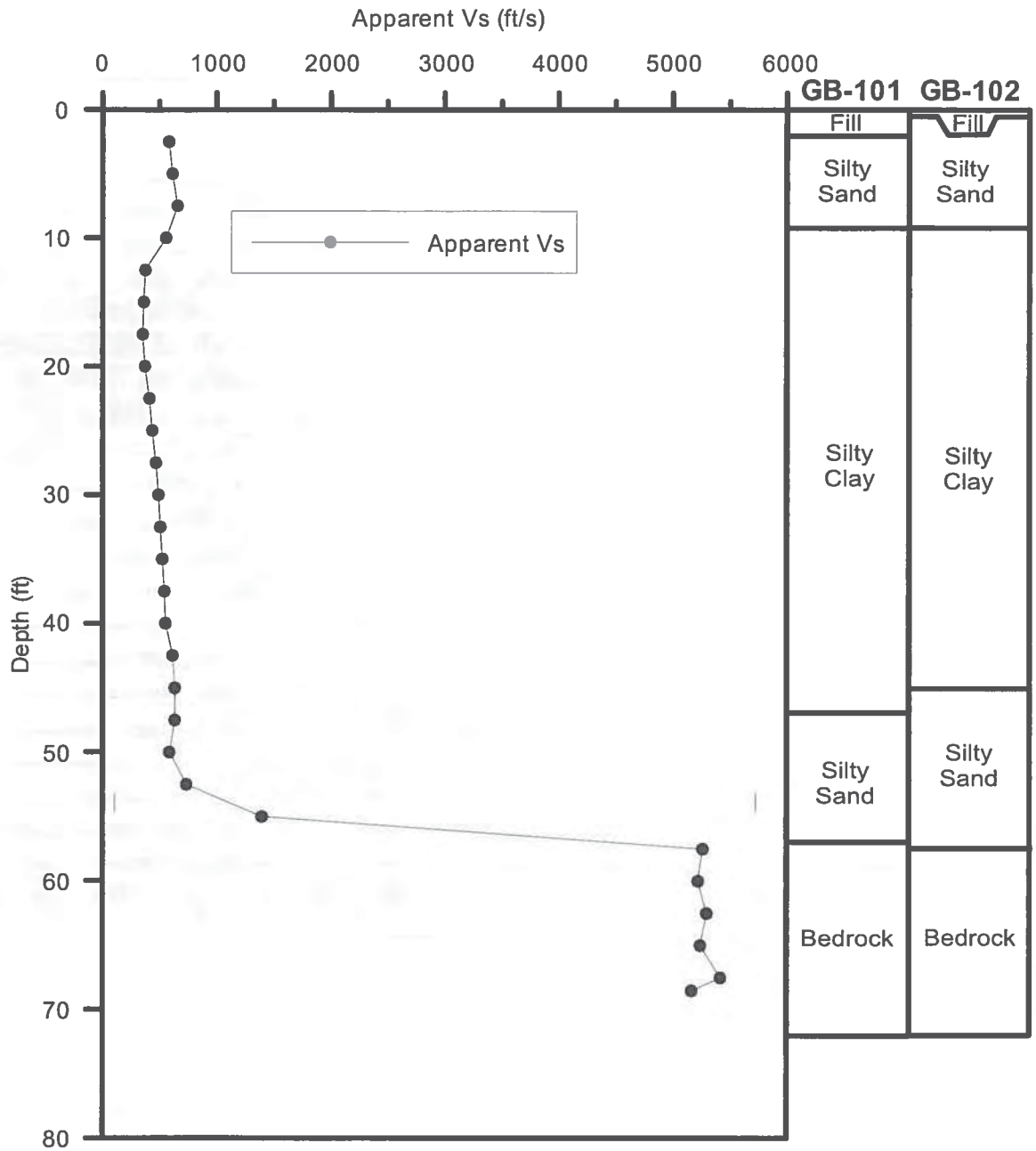
NOTE:

The general geologic log taken from log for boreholes GB-101 & GB-102, provided by R.W. Gillespie & Associates,

Figure 5
Distance Between Boreholes
Lot 4 – Portland Technology Park
Portland, Maine

File 15J69 | October, 2015

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



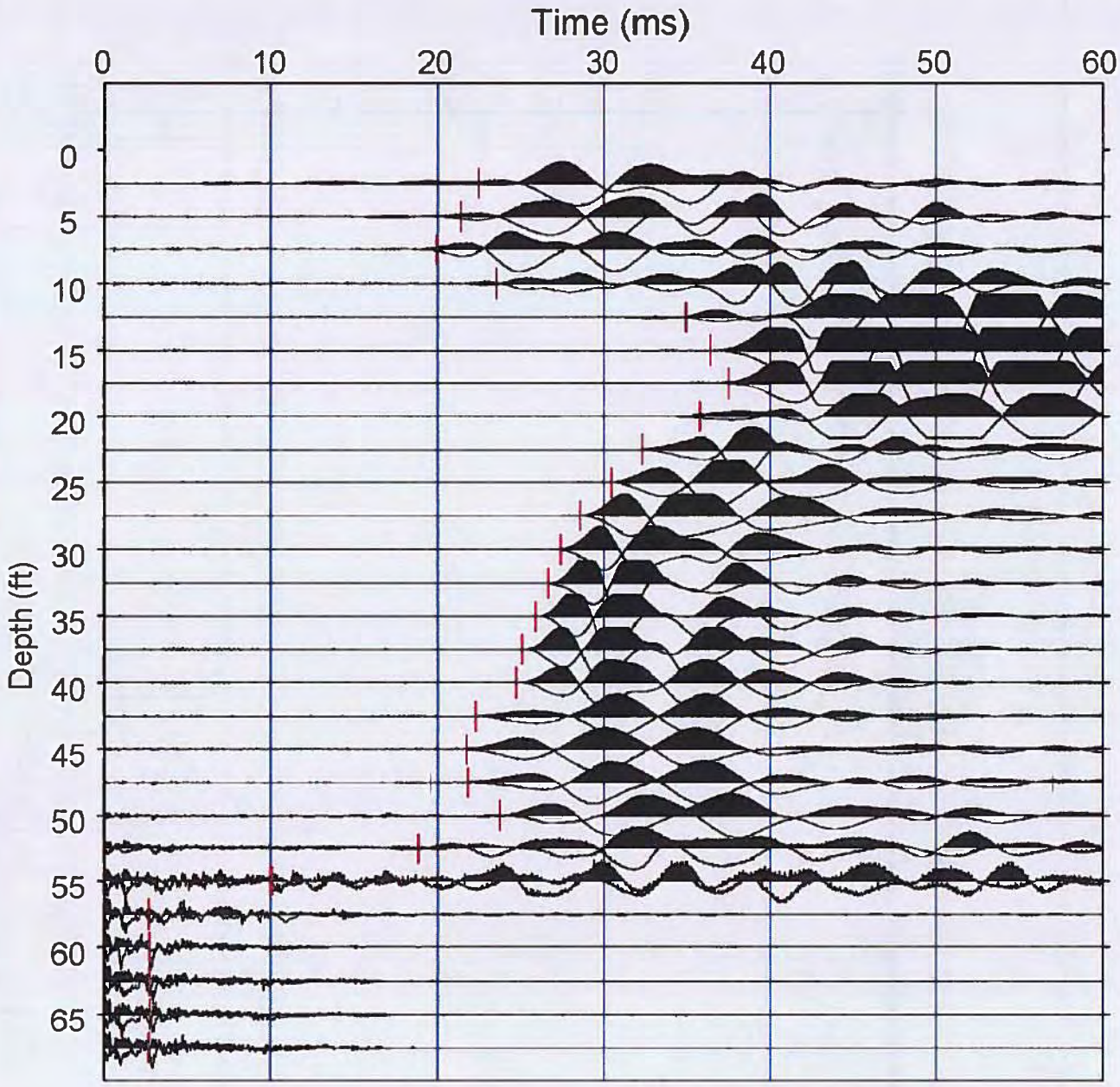
NOTE:

The general geologic log taken from log for boreholes GB-101 & GB-102, provided by R.W. Gillespie & Associates,

Figure 6
Apparent Velocity of Shear Waves
Lot 4 – Portland Technology Park
Portland, Maine

File 15J69	October, 2015

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



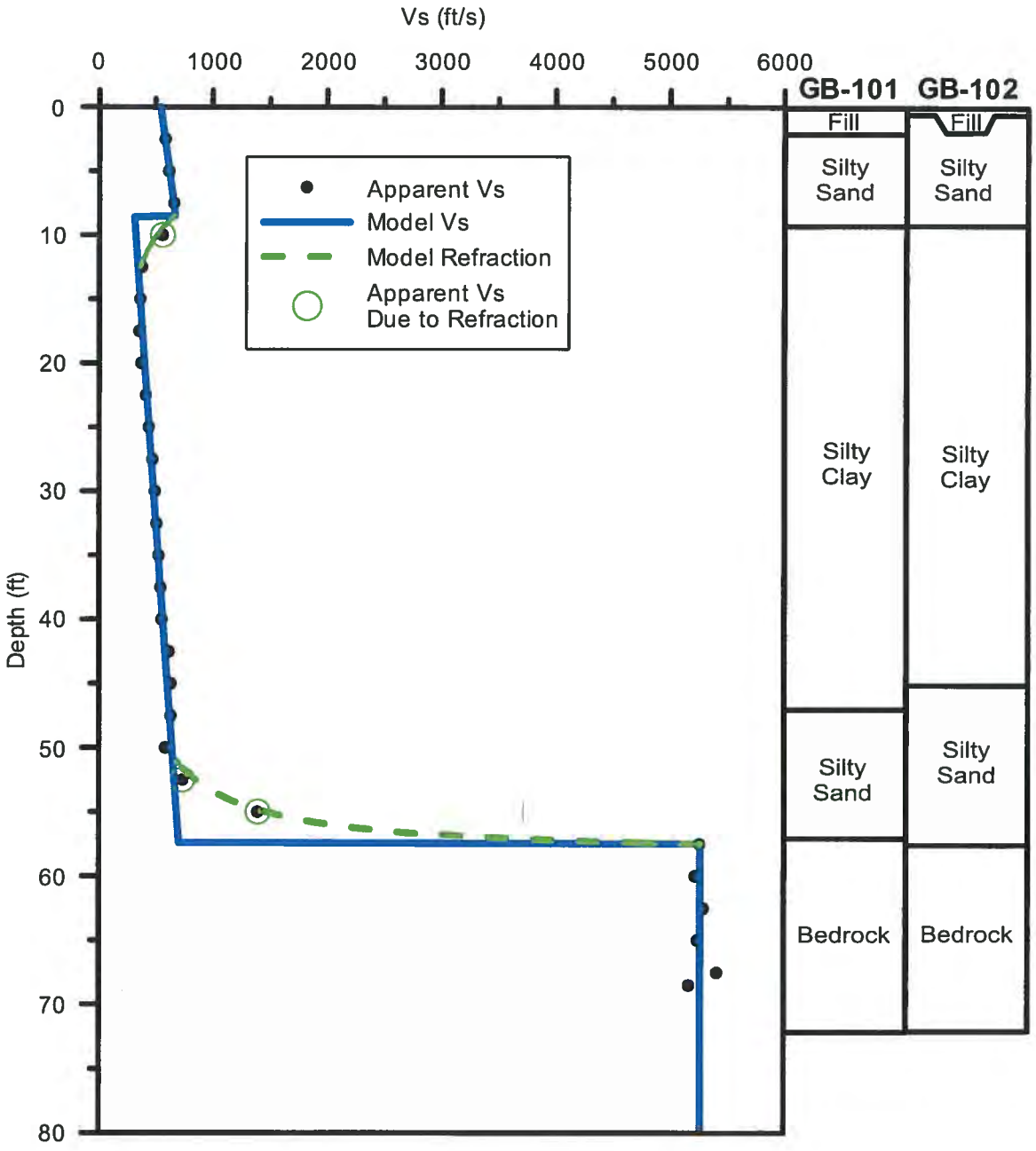
NOTES:

1. Seismic signal generated with a downhole hammer source.
2. Seismic signal detected with a downhole triaxial geophone receiver.
3. Downhole source and receiver positioned at same depth for each seismogram.
4. Superimposed seismograms for each depth represent opposite stacking polarity.
5. Composite seismograms assembled from horizontal component of triaxial geophone.
6. The short red lines mark the initial arrivals of sheer waves.

Figure 7
Composite Seismogram
Lot 4 – Portland Technology Park
Portland, Maine

File 15J69	October, 2015

HAGER–RICHTER GEOSCIENCE, INC.
Salem, New Hampshire



NOTES:

1. The parameters for the model velocity line are reported in Table 2.
2. Bedrock depth reported in boring logs was used.
3. The general geologic log taken from log for boreholes GB-101 & GB-102, provided by R.W. Gillespie & Associates.

Figure 8
Model Velocity of Shear Waves
Lot 4 – Portland Technology Park
Portland, Maine

File 15J69 | October, 2015

HAGER-RICHTER GEOSCIENCE, INC.
Salem, New Hampshire

APPENDICES

APPENDIX 1

BORING LOGS
GB-101 and GB-102

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

Boring Log: GB-101
Total Depth (ft): 72
Sheet 1 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Installed Solid Casing
Observed Water Depth: 7'

Drilling Contractor: Great Works Test Boring
Drill Rig: CME850
Driller Rep.: Jeff Lee
Date Started: 09/17/2015
Date Completed: 09/17/2015
Surface Elevation: 67 (Feet)
Drilling Method: Drive and Wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0				FILL; BARK MULCH (3 inches).					
				FILL, Silty sand, moist, fine sand, some silt, trace medium sand, bluish gray					
				SILTY SAND (SM); Moist to wet, fine sand, some silt, grayish brown.					
5									
	▽								
10				SILTY CLAY (CL); Silty clay, gray.					
15									
20									
25									

Notes: Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

Boring Log: GB-101
Total Depth: 72
Sheet 2 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 7'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30									
35									
40									
45									
50			S-1	SILTY SAND (SM); Medium dense, wet, fine to medium sand, some silt, few gravel and coarse sand, gray.	11	4 7 4 3	11		
55				Bedrock encountered at 57', roller cone drilled to 72'.					

Notes: Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

Boring Log: GB-101
Total Depth: 72
Sheet 3 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 7'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
60				Bedrock.					
65									
70									
				Bottom of Exploration at 72'; Terminated boring 15' into rock.					
75									
80									
85									

Notes: Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering•Geohydrology•Materials Testing Services

Boring Log: GB-102
Total Depth (ft): 72
Sheet 1 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
RWG&A Project No. 1518-002
Location: Portland, Maine
Client: Patrons Oxford Insurance
RWG&A Representative: C. Morrell
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Installed Solid Casing.
Observed Water Depth: 7'

Drilling Contractor: Great Works Test Boring
Drill Rig: CME850
Driller Rep.: Jeff Lee
Date Started: 09/18/2015
Date Completed: 09/18/2015
Surface Elevation: 67 (Feet)
Drilling Method: Drive and Wash
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0				TOPSOIL AND ORGANIC MATERIAL (4 inches).					
				SILTY SAND (SM); Moist, fine sand, some silt, grayish brown.					
5									
10				SILTY CLAY (CL); Medium stiff to soft, silty clay, gray.					
15									
20			FV	Field Vane: Undrained Shear Strength: Su=480 psf, residual 50 psf.					
			FV	Field Vane: Undrained Shear Strength: Su=490 psf, residual 40 psf.					
25									

Notes: 1. Used 3 5/8"x9" Acker field vane for shear strength testing.
2. Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering • Geohydrology • Materials Testing Services

Boring Log: GB-102
Total Depth: 72
Sheet 2 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 7'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
30			FV	Field Vane: Undrained Shear Strength: Su=490 psf, residual 50 psf.					
			FV	Field Vane: Undrained Shear Strength: Su=550 psf, residual 40 psf.					
35									
40			FV	Field Vane: Undrained Shear Strength: Su=640 psf, residual 20 psf.					
			FV	Field Vane: Undrained Shear Strength: Su=520 psf, residual 0 psf.					
45				SILTY SAND (SM); Fine to medium sand, some silt, few gravel and coarse sand, gray.					
50									
55				Bedrock encountered at 57.5 feet, roller cone drilled to 72'.					

Notes: 1. Used 3 5/8"x9" Acker field vane for shear strength testing.
2. Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

R.W. Gillespie & Associates, Inc.
Geotechnical Engineering•Geohydrology•Materials Testing Services

Boring Log: GB-102
Total Depth: 72
Sheet 3 of 3

Project Name: Prop. Patrons Oxford Ins. Office Bldg.
Location: Portland Maine
Client: Patrons Oxford Insurance
Observed Water Depth: 7'

RWG&A Project No. 1518-002
Surface Elevation: 67 (Feet)
Casing Type: 4" Steel

DEPTH, FT.	SYMBOL	SAMPLES	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
60				Bedrock.					
65									
70									
				Bottom of Exploration at 72'; Terminated boring 14.5' into rock.					
75									
80									
85									

Notes: 1. Used 3 5/8"x9" Acker field vane for shear strength testing.
2. Installed 3-inch inside diameter, close ended, Schedule 40 PVC casing in completed borehole. Casing was grouted into place using a cement-bentonite mixture. Casing filled with potable water.

APPENDIX 2

DEVIATION DATA

HAGER-RICHTER GEOSCIENCE, INC.

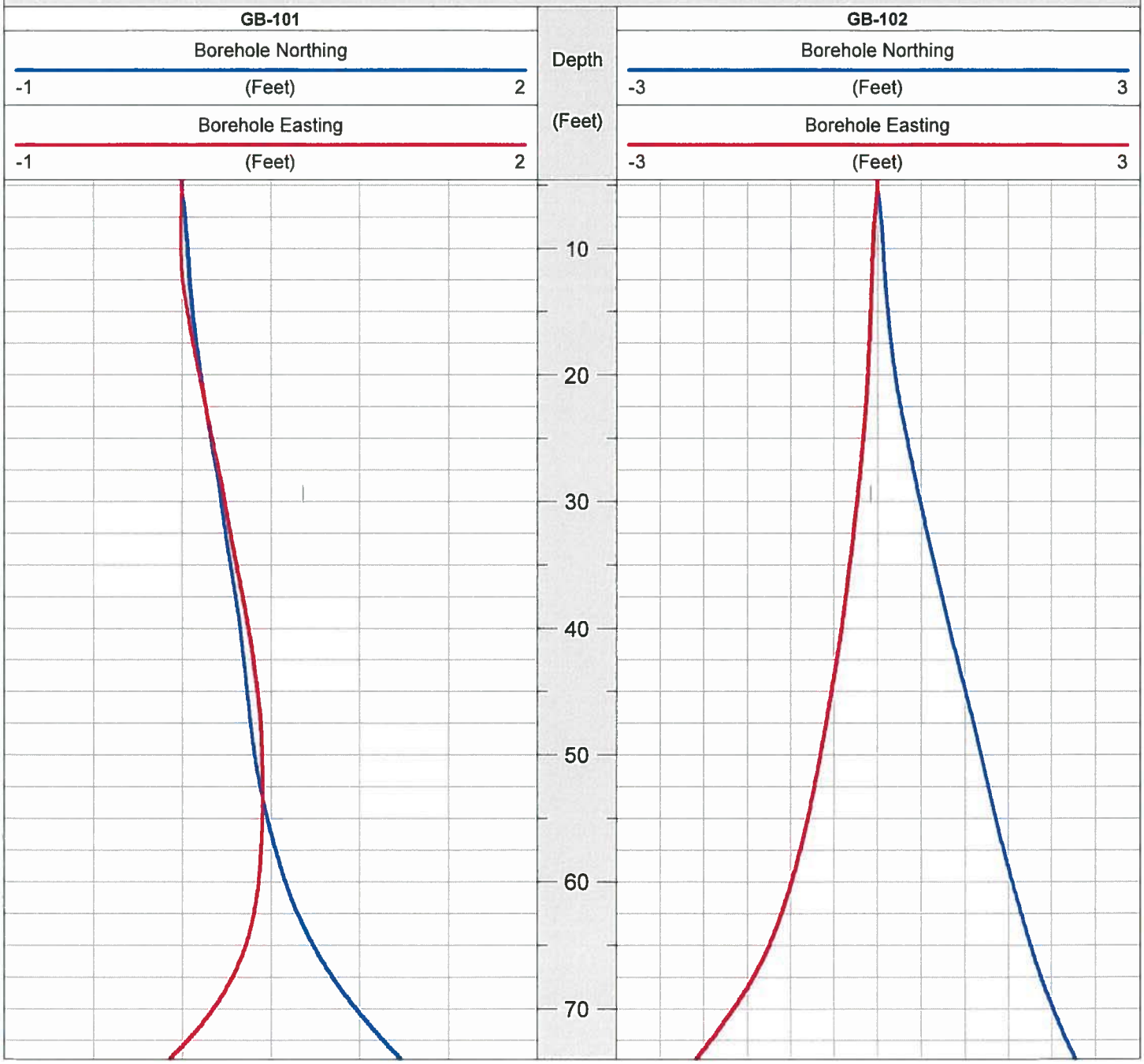
8 Industrial Way - D10
Salem, NH 03079
Phone: 603-893-9944
Fax: 603-893-8313

BOREHOLE DEVIATION LOGS

DATE LOGGED: September 24, 2015

CLIENT:	RW Gillespie and Associates, INC	H-R FILE:	15J69
PROJECT:	Lot 4 - Portland Technology Park	LOG DATUM:	Ground Surface
LOCATION:	Portland Technology Park	ORIENTATION REFERENCE:	Magnetic North
CITY, STATE:	Portland, Maine	LOGGING GEOPHYSICISTS:	Michael Howley

Borehole Deviation Logs



APPLICANT'S 11.3.2015 REPONSES IN **BLUE**

Planning and Urban Development Department
Planning Division

Subject: PTP Design Review – Patrons Oxford

Written by: Caitlin Cameron, Urban Designer

Date of Review: Friday, October 30, 2015

The proposed new construction of a commercial office in the Portland Technology Park was reviewed according to the *Portland Technology Park Design Guidelines*. The project was reviewed by Caitlin Cameron, Urban Designer, Jean Fraser, Planner, and Shukria Wiar, Planner.

Findings of the Design Review:

The Technology Park Guidelines expresses the following goals for new development projects:

- Design Quality
- Durability
- Energy/Environmental Performance

The proposal for Patrons Oxford Offices is a contemporary design that conveys an identity of innovation and technology. Several energy and environmental performance strategies are integrated with the building design including roof forms to maximize photovoltaics, building orientation for passive solar, low-e windows, and a light colored roof to reduce heat island effect. The project meets the overall goals of the Portland Technology Park Design Guidelines but there are some outstanding items below regarding specific standards.

Design Review Comments *(red text denotes standards that are not met or additional information needed)**:***

PTP Portland Technology Park- Site Design Standards

Signage – More information requested – A sign master plan has not been submitted at the time of this review. How will signs be placed on the building? How will visibility be addressed? Building signage will consist of metal lettering mounted on stand-offs, this technique will also be utilized on the free-standing sign by the site entrance. Both free standing and building signs will be illuminated from wall or site mounted light fixtures.

Please see attached images (1,2) for more information Also, please note the logo is representative and does not reflect new branding currently under development.

PTP Portland Technology Park- Building Design Standards

Building Massing and Form – Met – The proposed building is two stories with the long dimension oriented South. The form is a modified rectangle and the overall design is contemporary in style. Architecture provides an integrated design. Wood screens are incorporated to address the preference for natural colors and materials. The roof line is varied and will potentially provide visual interest to the highway approach.

Zoning Standards – Met – Building is proposed to be two stories with pavement setbacks.

Building Envelope

- **Exterior Siding** – Additional information requested – The proposed materials meet the standard for continuity, quality, and durability and convey a "high tech" quality. Materials include Fiber cement board, storefront, metal siding, and wood siding. No vinyl or masonry block is proposed. However, the renderings and elevations differ in the placement of the wood screens – please indicate whether the screens will extend to the ground level and what finish they will have for long-term durability. The standards also require that storefront systems must exceed the MUBEC by 10%.

  The elevations are current; wood will not be brought to the ground. See Images 3, 4, 5, 6. Wood screens will be constructed from wood with a thermally treated finish, and/or will be constructed from decay-resistant species. The project requires a minimum performance requirement for all window systems. (For reference specified insulated glazing exceeds min u-value by approximately 17%)

- **Windows** – More information requested – Exterior window finishes appear to meet the standard.
  - Window Transparency - The rendering shows reflectivity in the glass which is not permitted – please provide information about the glazing specified (visual transmittance, tint, etc.).

    Specified clear insulated glass is not reflective, and will provide excellent values for this application. The specified solar control glass provides a 0.39 SHGC while maintaining VLT values of 70 and U values of 0.29

  - Passive Solar - Sun shades are recommended to cover 75% of the windows on the South exposure. It appears there is a small overhang on the ground level, but no shades or overhangs proposed on the second floor.

    The building form provides overhangs above the first floor ranging from 4'-0" to 10'-6" along the whole south elevation. In addition to this the depth of the exterior jamb will be a factor in shading the second floor windows. The primary means of controlling southern solar exposure however is the specification of a high performance glazing that incorporates coatings which are capable of blocking 62% of the solar energy

- **Entrances** – Not Met – The entrance faces the entry drive and includes a vestibule as recommended by the standard. However, a covered entrance is required to provide a transition into the building and is currently not provided. Modifying the design to

include a covered entry will also increase the visibility and emphasis on the main access point.

The building form provides and integrated covered entrance and serves to highlight the entrance. This overhang exceeds 10'-0" in the area of the entrance, and covers an area of more then 30'-0" wide. See image 7, 8 for more information.

- **Roofs** – Met – flat and sloped roofs are permitted. The project uses a light-colored roof to reduce Heat Island Effect as required by the standard.

- **Exterior Trim and Detailing** – Met – Metal trim details proposed to match siding finish. Wood screens are proposed as a natural material detail.

COMMITMENT & INTEGRITY
DRIVE RESULTS

41 Hutchins Drive
Portland, Maine 04102
www.woodardcurran.com

T 800.426.4262
T 207.774.2112
F 207.774.6635

November 20, 2015

Jean Fraser, Planner
City of Portland Planning Office
389 Congress Street
Portland, ME 04101

Re: Portland Technology Park LCE 4
Level III Site Plan & Subdivision Amendment – Response to Comments

Dear Jean:

On behalf of the Patrons-Oxford Insurance Company and the City of Portland, we are submitting this response to comments for the Level III Site Plan Application for the Portland Technology Park Limited Common Element (LCE) 4 project. The project was presented at the City of Portland Planning Board Workshop on Tuesday, November 10, 2015. We received comments from reviewers as part of the Planning Board Memo and in additional correspondence since that meeting, and we provide the following responses to those comments:

November 10, 2015 Planning Board Workshop Memo From Jean Fraser

- *Address the Traffic Engineer, Peer Engineer, and DPS Review Comments*

  Responses to these comments are addressed later in this letter.

- *Add bicycle parking (14 spaces) to site plan*

  Bicycle parking has been updated. Five hitch-style bicycle racks, providing parking for ten bicycles are provided near the rear employee entrance. Two racks, providing parking for four bicycles are provided near the front visitor entrance. The required total of 14 spaces is now provided.

- *Further clarification of signage proposals*

  The location of the free-standing entrance sign is now shown on the site plan. Additional sign information will be provided under separate cover.

- *Confirm with the City Arborist re tree preservation in the extended LCE area*

  City Arborist comments are addressed later in this letter.

- *Revise snow storage areas*

  Snow storage areas have been revised on the site and landscaping plans.

- *Provide specifications for site and exterior building light, and sign lighting*

  Cut sheets for all site and exterior building lighting is enclosed.

- *Submit a TDM plan for LCE#4*

Per condition v. of the February 2012 Subdivision approval, a TDM has been provided for the Technology Park. Additional comments on the TDM are addressed later in this letter. Responses will be provided under separate cover.

- *Address any comments of the Planning Board*

  No comments requiring submission of additional information were provided by the Planning Board. We will plan to provide additional information on Gravel Wetlands as part of our Public Hearing presentation, per the request of the Planning Board during the Workshop.

November 4, 2015 Updated Design Review Comments from Caitlin Cameron, provided as part of the Planning Board Workshop Memo

The original design review comments were provided on October 30, 2015, and a response was provided to Planning Department by Scott Simons Architects on November 3, 2015. All comments have been addressed except for the additional information requested on signage. Additional sign information will be provided under separate cover.

November 5, 2015 Preliminary Site Plan Review Memo from James Seymour, provided as part of the Planning Board Workshop Memo

Woodard & Curran met with Planner Jean Fraser and Peer Reviewer James Seymour to discuss general comments and concerns on the project. We are providing the following additional information on the four general topics from the memo:

- *Geotechnical/Saturated Soils*

  A geotechnical report was submitted via email on November 3, 2015.
  The report includes further information on the soil conditions at the site, and we have been working closely with the geotechnical engineer to address concerns to prevent issues related to soil settlement, groundwater concerns, and freeze thaw.

  - The site soils will be overexcavated at the building and replaced with lightweight flowable fill to reduce settlement concerns due to building and fill loads. The structural engineer and the geotechnical engineer are coordinating on this design.
  - Concrete walkways and patios immediately adjacent to building foundations will have a 24-inch, geotextile-wrapped crushed stone base to help alleviate settlement, freeze thaw, and drainage concerns.
  - A crushed stone drip edge has been added to the western side of the building to help alleviate drainage concerns.
  - An extensive network of underdrains has been added around the building and throughout the paved parking lots to alleviate groundwater and drainage concerns.

- *Stormwater Treatment & Drainage*

  Additional spot grades have been added to the eastern and western sides of the building to indicate drainage intent. The western side of the building has a roof drip edge, and an underdrain has been added around the entire perimeter of the building. The areas around the building will

have extensive, tree, shrub, and other herbaceous plantings. This vegetation will also help with stormwater management.

We have reviewed the gravel wetland HydroCAD models, and provide the following table listing peak water elevations during the 24-hour, Type III, 2-year, 10-year, and 25-year storm events:

	Storm Event		
	2-Year (3.1", 24-hr, Type III Storm)	10-Year (4.6", 24-hr, Type III Storm)	25-Year (5.8", 24-hr, Type III Storm)
Gravel Wetland 4 Peak Water Elev.	67.28'	67.71'	68.01'
Gravel Wetland 8 Peak Water Elev.	67.69'	67.84'	67.90'

The building finish floor elevation is 70.25, 2.25' above the peak water elevation in a 25-year storm event. All parking lot surfaces and pedestrian access areas are also higher than this elevation. With the addition of underdrains beneath pavement and the use of non-frost susceptible concrete sidewalk base material, drainage will be managed on the site.

As noted, stormwater treatment has been addressed for the overall Technology Park as part of our submission. The following table summarizes the level of treatment provided for the LCE 4 area specifically.

	LCE 4 Developed Area (SF)	LCE 4 Impervious Area (SF)
Total	86,060	66,140
Treated by GW 4	40,445	30,490
Treated by GW 8	34,810	35,650
Treated by Other	0	0
Untreated	10,805	0
% Treated	87%	100%

Note that impervious and developed area numbers have changes slightly from the previous submission to reflect some changes that have been made to the site. The developed area has been reduced with some modifications to the parking northern end of the parking lot and the snow storage areas. Impervious areas have also been reduced due to the northern parking lot changes and modifications to the patio areas.

- *Construction Management Plan*

  As noted in Section 9 of the application, the project contractor will be required to submit a detailed construction management plan prior to the start of construction. This plan will be submitted to the City for review at that time. The earthwork subcontractor has not yet been selected for this project, and certain means and methods will not be determined until that time. In general, the following conditions will be followed:

  - The contractor will be required to install erosion control in conformance with "Maine Erosion and Sedimentation Handbook for Construction: Best Management Practices," and the site specific erosion and sediment control measures as shown on the site plan and details. Detailed notes on erosion and sediment control are included on detail sheet

C-10. These notes include general information, measures for temporary and permanent erosion control, and inspection and maintenance requirements. These notes also specifically require sweeping of paved surfaces.

- The contractor will be required to take special care to prevent sedimentation in the gravel wetlands. A note has been added to the site plan to emphasize that additional erosion control will be required in these areas, and that if sedimentation does occur, the contractor will be required to clean the area once construction has been completed.

- Specific dewatering details will be developed as part of the final construction management plan, and will follow all applicable regulations. A dewatering discharge sediment control device detail and general dewatering notes are provided on the detail sheets. Depending on the phasing of the construction work, the dewatering discharge locations will change. Certain open excavated areas may be utilized for dewatering storage; however, this will not be determined until an earthwork contractor has been selected. Locations of dewatering discharge will be included in the Construction Management Plan, and will be submitted for review and approval by the City.

- Stockpile areas will be determined as part of the development of the final construction management plan. Locations will be submitted for review and approval by the City of Portland.

- *General Site Plan Revisions*

  More spot grades and drainage arrow notation has been provided to add clarity to drainage on the east and west sides of the building.

  Comments from the Maine DEP have included requests for minor clarifications, the re-submission of information provided as part of the previous Technology Park submission, and the addition of a spillway detail to the plans, but they have not yet provided any conditions of approval for the project. Final permit documents with conditions of approval will be provided when available

November 5, 2015 Preliminary Traffic Comments email from Tom Errico, provided as part of the Planning Board Workshop Memo

- *I have reviewed the trip generation analysis conducted by Gorrill-Palmer and concur that the proposed project complies with the Traffic Movement Permit and a traffic study is not required.*

  No response required.

- *I have reviewed the parking study and find it to be acceptable. Given employee information and data from the ITE Parking Generation Manual, a sufficient parking supply will be provided.*

  No response required.

- *The site plan should account for likely origin/destination patterns of pedestrians when walking between the main parking lot and the entry. I would suggest a more direct pedestrian facility be provided.*

  The crosswalk that is intended for pedestrians walking from the visitor parking spaces to the front entrance has been adjusted to provide a more direct path. Extensive tree, shrub, and

herbaceous plantings near the sidewalk and crosswalk will also help to keep pedestrians within the designated walking corridor.

- *The applicant should provide supporting documentation on the need for the channelization island at the driveway intersection with the main entry roadway.*

  A channelization island is proposed for the driveway intersection with the main entry roadway to help manage two-way entering and exiting traffic within the space. We have removed the curbing and landscaping, and a mountable concrete island will be used, allowing for fire trucks and larger delivery vehicles to drive over the island as needed.

- *The vehicle turnaround at the end of the parking lot can be modified to reduce the pavement area.*

  This pavement area has been reduced to provide a minimized turnaround area.

November 5, 2015 Development Review Comments from David Margolis-Pineo, provided as part of the Planning Board Workshop Memo

- *The applicant will need to submit a Wastewater Capacity Application for review and approval. The project application states the new building will house approximately 60 to 65 persons. Please include allowances for any food preparation facilities. Please be award that a grease capturing device may be required for the food prep area.*

  A Wastewater Capacity Application will be sent directly to David Margolis-Pineo for his review. The waste water quantity included in the application is the same as the quantity provided in Section 14 of the Application. The building will not include any food preparation areas except for a standard office kitchen space. No grease trap will be required.

- *Add to Note 21 on Sheet G-01 that "Under no circumstances shall top soil be removed from the boundaries of the Portland Technical Park. If a surplus of topsoil exists, the contractor shall coordinate with the City representative to find a location to stockpile, seed and mulch.*

  This note has been added to the plans.

- Sheet C-09 shall be modified to show the proposed 8" sanitary sewer between SMH #7 and SMH #8 to be installed with a straight line and grade or show a new manhole on the stub extending from SMH #7. If the stub is reinstalled, the road shall be repaved to the point of disturbance.

  A new manhole has been added to the stub extending from SMH #7. The utility plan has been modified to reflect this change.

- *Also, please superimpose SMH #9 (by others) on Sheet C-04 showing the proposed location, and elevations of rim and inverts. The intent is to avoid comment 3 above in the future.*

  The future sewer extension, including the manholes and sewer line have been added to the utility plan for reference.

Tree Preservation Comments from Jeff Tarling via. November 17, 2015 email from Jean Fraser.

The email from Jean Fraser indicates that both Jean and Jeff Tarling (and also Tom Errico as referenced to his comments above) have concerns with regards to the additional pavement area at the northern end of the parking lot.

This pavement area has been reduced to a minimized turnaround for the adjacent parking spaces. The snow storage area has been reduced in this area, and the clearing limit has been pulled in. Similar changes to the snow storage area and clearing limit have been made at the edge of the southern parking area. With these changes, the total developed area and clearing limit for the LCE 4 site has been reduced by a total of 1,400 square feet. Notes have been added to both areas to emphasize tree preservation beyond the clearing limits.

TDM Plan Comments from Tom Errico via November 19, 2015 email from Jean Fraser.

The email from Jean Fraser indicates that both Jean and Tom Errico are requesting more LCE-4-specific TDM information.

A response to the TDM comments will be provided under separate cover.

Plans have been updated to reflect various comments that have been received. In addition, the site layout, including patios and sidewalks and the site landscaping have been further developed since the first submission. A generator has been added to the site and is located within an island in the southern parking lot. An additional detail sheet has been added, and previous details have been shifted around to fit on the detail sheets. Plans that have changed since the first submission are enclosed with this letter. Changed plans have been noted with a revision date, and revisions have been clouded.

If you have any additional comments or questions, please do not hesitate to reach out to me. Thank you for your help in coordinating the review of this project.

Sincerely,

WOODARD & CURRAN

Lauren Swett

Lauren Swett, P.E.
Project Engineer

Enclosures: Lighting Cut Sheets
Updated Plans

PN: 229001

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

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

David Margolis-Pineo
Deputy City Engineer
207-874-8850
207-400-6696
dmp@portlandmaine.gov

Date: November 25, 2015

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

Site Address: Portland Technology Park Condominium, 300 Rand Road, Limited Common Element 4

Chart Block Lot Number: 249 A001 001

Proposed Use: Office Building
Previous Use: Undeveloped
Existing Sanitary Flows: 0 GPD
Existing Process Flows: 0 GPD
Description and location of City sewer that is to receive the proposed building sewer lateral.

A new 8" sewer was installed in the Portland Technology Park roadway constructed in 2013. The road and associated sewer line will be extended to reach the Limited Common Element 4 driveway and a sewer service will be brought into the lot from the road.

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

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

2. Please, Submit Contact Information.

City Planner's Name: Jean Fraser Phone: 207-874-8728
Owner/Developer Name: Patrons Oxford Insurance Company, c/o Mark Pettingill
Owner/Developer Address: PO Box 1960, Auburn, ME 04211
Phone: 207-783-7507 Fax: E-mail: mpettingill@patrons.com
Engineering Consultant Name: Woodard & Curran, c/o Lauren Swett
Engineering Consultant Address: 41 Hutchins Drive, Portland, ME 04102
Phone: 207-558-3763 Fax: E-mail: lswett@woodardcurran.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: 1,520 GPD (4 employees/1,000 SF x 19,000 SF x 20 GPD per employee when showers provided (per 2015 Maine Subsurface Wastewater Disposal Rules) =
Peaking Factor/ Peak Times: 5.6 (Typical per TR-16 Guides for the Design of Wastewater Treatment Works)
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,* X *Other (specify)*
As Noted Above

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

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: Not Applicable

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

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

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: Not Applicable GPD

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

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

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

Peaking Factor/Peak Process Times: _____

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

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

GORRILL PALMER

PO Box 1237, 15 Shaker Road
Gray, Maine 04039
207.657.6910

Transportation Demand Management Plan
Portland Technology Park
Portland, Maine

November 25, 2015

The Portland Technology Park development provides this Transportation Demand Management (TDM) Plan in support of the City's transportation and environmental sustainability goals by encouraging and promoting bicycling, walking, use of transit, and adjustment to working schedules. This project is the first building in the approved development to be developed. The proposed development is approved for approximately 120,000 square feet of research and development space and office space divided into seven buildings. The site is located off Rand Road near Exit 47 I-95 northbound and southbound ramps.

TDM Coordinator

The Portland Technology Park will have a designated TDM Coordinator to administer the TDM Plan. Since this is the first building to be constructed, the initial TDM coordinator will be one of the employees of this first building. That person has not yet been designated but once chosen, the name can be provided to the City. Once more of the buildings are constructed and occupied, and the duties take more time and effort, the Park may opt to designate a specific coordinator for the entire park. The TDM coordinator will be responsible for posting changes and updates to the METRO schedule on the website, monitoring bike rack use, administering the yearly survey, as well as providing other information relevant to promoting and encouraging the greater use of bicycling, walking, bus-based transit, and working with the individual businesses on adjusting working hours to avoid overlap with peak hours and promoting rideshare opportunities.

Employee Survey

Having an on-site employee designated as the TDM Coordinator allows for constant interaction with the other park businesses and employees. Being an employee of the park lends itself to an even greater knowledge and understanding of the needs, which allows for a quicker response to issues or concerns. In addition to the on-going discussions between the park employees / businesses and the coordinator, the Portland Technology Park will survey the employees on a regular basis to gather thoughts and ideas on how to improve the TDM measures. The initial survey will be completed within six months of the building occupancy and used to refine the initial scope of the TDM plan. The survey will be electronically tabulated and will produce comparable data with each survey. The data will be used by employees to foster carpooling and ride sharing and should identify barriers to public transit, bicycle, and pedestrian transportation.

Following the completion of an employee survey, the TDM will be reviewed and updated to reflect the feedback received from the survey. A copy will be provided to the City for review. With the development of each new lot in the Technology Park, the TDM will be reviewed and updated and provided to the City for review as part of the Site Plan process. Any time changes made to the TDM

to reflect changes in traffic management practices in the Technology Park, a copy of the updated TDM will be provided to the City.

Parking and Trip Reduction Target

The permitted trip generation for this overall technology park is 163 AM peak hour trip ends and 153 PM peak hour trip ends. The forecast trip generation is based on ITE *Trip Generation*, Seventh Edition. The peak parking demand requirement for this specific development (Lot 4) based on the City of Portland Ordinance is 48 vehicular parking spaces. However, the proposed Lot 4 use is expected to have 65 employees as well as designating 6 parking spaces for visitors only, and is therefore proposing a total of 70 parking spaces. Providing 70 parking spaces yields a parking ratio of 3.7 per 1,000 sf, which is consistent with the parking ratio that was previously approved for the overall park. An achievable percentage reduction in transportation demand is difficult to determine at this time because the exact use of future buildings is unknown. However, we would expect that the reduction in traffic to / from the site would decrease proportionally from what would be expected for isolated individual uses as more development occurs, allowing greater use of the TDM measures. The goal would be to improve the use of TDM measures on a yearly basis. This will be monitored by the TDM Coordinator.

Parking Trip Reduction Strategies

The following are potential strategies that may be implemented to decrease parking demand and / or trip generation for both the initial office building as well as the overall park. It should be emphasized that this is a dynamic plan and should remain flexible to accommodate changing demands of the employees. The employee survey identified previously herein will be critical to keeping in touch with the best incentives to encouraging continued involvement in the TDM methodologies.

Education

The TDM Coordinator will be responsible for providing information for each building that includes; educational and promotional materials that identify the advantages and cost saving opportunities of using alternative transportation, promotion of the on-site bicycle racks and bicycle routes, METRO stop schedules and stop locations within the area, promotion and information about a ride share program, and contact information for the TDM Coordinator. Since the initial TDM coordinator will be an employee of the first building, this information and education will start with the very with the first building and can be refined as more buildings are occupied.

Flexible Hours

The Portland Technology Park will work with each business as the Park is occupied and encourage employers to allow employees to start work earlier or later than the typical AM peak hour and end the day before or after the typical PM peak hour. This creates less traffic impact on the adjacent roadway network during the peak hours. Since this is only the first building of the Park, and other tenants and their individual circumstances are unknown, it would be difficult to commit future uses to enforcing flexible hours. However; the tenant of the first building is committed to pursuing the possibility, keeping in mind that they have to deal with the public and must be available during normal business hours to respond to their clientele.

METRO

At this time, the nearest METRO bus stop is on METRO Route 4 and located approximately 0.75 miles away, at the intersection of Rand Road with Brighton Avenue. The bus schedules will be provided in the lobby of each building and the Portland Technology Park businesses could encourage the use of the METRO by offering discounted METRO tickets. Using the METRO will be explored further in the employee survey. The survey will attempt to further understand what incentives, if any, would encourage the use of the METRO. This is critical in evaluating the most effective and preferred incentives. As stated previously, the first survey will be conducted within six months of the building occupancy.

Bicycle Use

Each of the seven buildings will provide on-site bicycle racks. The number of bicycle spaces is based on the City Ordinance. The TDM Coordinator will monitor the bicycle rack use to identify if additional bike racks are warranted. Additional incentives that could be implemented in the future, should the employees identify that they would help encourage the use of bicycles, are the availability of showers at their place of employment or potentially indoor bicycle storage facilities.

Sidewalk Facilities

Sidewalks are proposed throughout the site providing a pedestrian connection between the buildings. Offsite, there is a sidewalk on Rand Road across from the site driveway. A crosswalk is striped across Rand Road to provide a pedestrian connection between the on-site buildings and the off-site sidewalk network.

Monitoring

The TDM Coordinator will be responsible for monitoring the TDM plan annually and making adjustments to the plan when necessary. This monitoring will be through periodic surveys combined with direct observation and interaction with employees and businesses. The observations will be compiled into a report. The monitoring will be on-going with update reports annually.

Incentives

Incentives may be used by the Portland Technology Park businesses to encourage the employees to reduce trip generation and parking demand. These may include free or reduced price bus passes, a courtesy van to/from the bus stop, car sharing, or preferred parking spaces for rideshare vehicles.

From: Lauren Swett <lswett@woodardcurran.com>
To: Jean Fraser <JF@portlandmaine.gov>
Date: 11/30/2015 5:08 PM
Subject: Portland Technology Park TDM
Attachments: 2015.11.25 PTP TDM (Update).pdf

Hi Jean,

Attached is an updated TDM for Portland Technology Park. For reference on this version we have shown the revisions in red. We have reviewed this with Patrons Oxford Insurance, and they have agreed to include carpool and alternative fuel vehicle spaces in their parking lot. We will add signs for these spaces to the plans along with any other updates that come from the generator discussion, additional review comments, and from the Planning Board Hearing itself.

Let me know if you have any questions. I'm out of the office much of tomorrow, but will be back in later in the afternoon. We are reviewing for the generator and parking concerns now too.

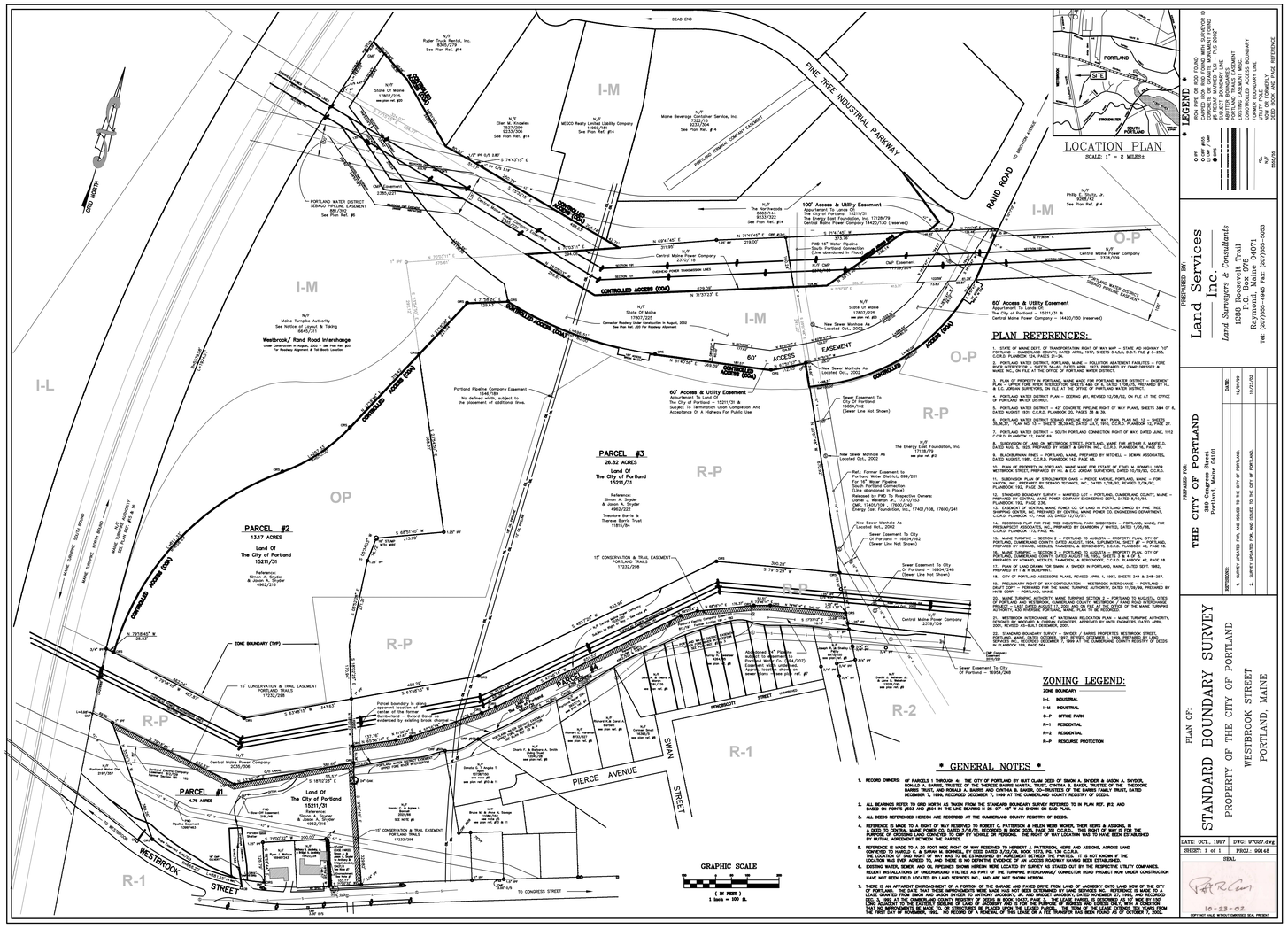
Thanks,
Lauren

Lauren Swett, P.E.

Project Engineer
Woodard & Curran
41 Hutchins Drive
Portland, Maine 04102
Phone: (207)558-3763 (direct)
(800)426-4262
Fax: (207)774-6635
Email: lswett@woodardcurran.com<mailto:lswett@woodardcurran.com>

Commitment & Integrity Drive Results
www.woodardcurran.com<http://www.woodardcurran.com/>

Plan 1



PREPARED BY:
Land Services Inc.
Land Surveyors & Consultants
128B Roosevelt Trail
P.O. Box 1209
Raymond, Maine 04071
Tel: (207)655-4945 Fax: (207)655-3053

PREPARED FOR:
THE CITY OF PORTLAND
389 Congress Street
Portland, Maine 04101

REVISIONS	DATE
1. SURVEY UPDATED FOR, AND ISSUED TO THE CITY OF PORTLAND.	12/20/99
2. SURVEY UPDATED FOR, AND ISSUED TO THE CITY OF PORTLAND.	10/23/02

PLAN OF:
STANDARD BOUNDARY SURVEY
PROPERTY OF THE CITY OF PORTLAND
WESTBROOK STREET
PORTLAND, MAINE

DATE: OCT., 1997 | DWG: 97027.dwg
SHEET: 1 of 1 | PROJ.: 99148

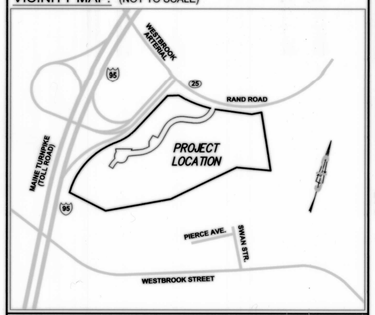
SEAL

10-23-02

COPY NOT VALID WITHOUT EMBOSSED SEAL PRESENT

REDUCED
CITY REVIEW SET
NOT FOR CONSTRUCTION

VICINITY MAP: (NOT TO SCALE)



GENERAL NOTES:

1) THIS PLAN AND ALL WORK ASSOCIATED WITH IT WAS PERFORMED BY SGC ENGINEERING, LLC PURSUANT TO A PROFESSIONAL SERVICES CONTRACT BETWEEN WOODARD & CURRAN, INC. AND SGC ENGINEERING LLC, DATED SEPTEMBER 8, 2010 AND SIGNED MARCH 14, 2011.

2) REFERENCE DEED FOR THE LOCUS PARCEL IS SIMON A. SNYDER, JASON A. SNYDER, RONALD A. BARRIS, TRUSTEE OF THE THERESE BARRIS MARITAL TRUST, CYNTHIA B. BAKER, TRUSTEE OF THE THEODORE BARRIS TRUST, RONALD A. BARRIS AND CYNTHIS B. BAKER, CO-TRUSTEES OF THE BARRIS FAMILY TRUST TO THE CITY OF PORTLAND, DATED DECEMBER 7, 1999 AND RECORDED IN DEED BOOK 15211, PAGE 031 AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

3) THE BEARINGS SHOWN HEREON ARE REFER TO GRID NORTH AND ARE BASED ON PLAN REFERRED TO UNDER MAP REFERENCES, NOTE 1.

4) THE LOCUS PARCEL IS DEPICTED AS LOTS 1 & 2 IN BLOCK A ASSESSORS MAP 249, ABUTTING PROPERTY OWNER INFORMATION REFERENCED HEREON WAS TAKEN FROM THE CITY OF PORTLAND ASSESSOR'S DATA AS OF THE DATE OF THIS PLAN.

5) RAND ROAD IS A PUBLIC HIGHWAY, THE SIDELINE LOCATIONS ARE BASED ON THE PLAN REFERENCED UNDER NOTE 1 OF MAP REFERENCES BELOW AND MAINE TURNPIKE AUTHORITY PLANS ON FILE AT THE OFFICES FOR THE MAINE TURNPIKE AUTHORITY.

6) NO SUBSURFACE INVESTIGATION HAS BEEN PERFORMED BY SGC ENGINEERING, LLC. DIG-SAFE SHOULD BE CONTACTED PRIOR TO COMMENCING ANY EXCAVATION. (888-344-7233).

7) THE BOUNDARY INFORMATION ON THIS PLAN IS BASED ON THE PLAN REFERENCED UNDER NOTE 1 OF MAP REFERENCES. SGC ENGINEERING FIELD CREWS COMPLETED A SURVEY OF THE PIPELINE LOCATIONS WITHIN THE PORTLAND PIPELINE COMPANY EASEMENT AND EXISTING MONUMENTATION FOUND AND SET BY PREVIOUS SURVEY COMPLETED BY LAND SERVICES, INC., FOR THE PURPOSE OF VERIFYING THEIR EXISTENCE AND TO OVERLAY DESIGN INFORMATION WITHIN BOUNDARIES DETERMINED BY LAND SERVICES, INC. SGC ENGINEERING DID NOT CONFIRM PERIMETER BOUNDARIES BEYOND LOCATION OF MONUMENTATION.

8) REFERENCE IS HEREBY MADE TO THE PORTLAND TECHNOLOGY PARK CONDOMINIUM DECLARATION OF CONDOMINIUM, INCLUSIVE OF BYLAWS, TO BE RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS AT BOOK _____, PAGE _____

9) ELEVATIONS ARE BASED ON NAVD 1988 DATUM.

10) CLEARING LIMITS SHALL BE RESTRICTED TO LIMITED COMMON ELEMENT AREAS. EASEMENT AREA 1 ASSOCIATED WITH THE SITE ROADWAY, EASEMENT AREA 2 ASSOCIATED WITH ACCESS TO THE TRAIL HEAD PARKING, AND EASEMENT AREA 3 ASSOCIATED WITH THE TRAIL HEAD PARKING. MANAGEMENT OF THE FORESTED COMMON AREAS OUTSIDE OF THE CLEARING LIMITS SHALL BE PERFORMED IN ACCORDANCE WITH A FOREST MANAGEMENT PLAN PREPARED FOR THE CITY OF PORTLAND AND APPROVED BY THE CITY ARBORIST. MONUMENTATION OF THE CLEARING LIMIT BOUNDARIES SHALL OCCUR PRIOR TO THE START OF CONSTRUCTION.

11) PHASE 1 INCLUDES CONSTRUCTION OF ALL PROPOSED RIGHT-OF-WAY IMPROVEMENTS IN RAND ROAD; 950 LF OF PARK ROADWAY WITHIN EASEMENT AREA 1; TEMPORARY GRAVEL TRAIL HEAD PARKING AREA WITHIN EASEMENT AREA 2; TRAIL HEAD PARKING AREA WITHIN EASEMENT AREA 3; LIMITED COMMON ELEMENT AREAS 1, 2 AND 3. PHASE 2 INCLUDES CONSTRUCTION OF REMAINING 450 LF OF PARK ROADWAY WITHIN EASEMENT AREA 1 AND LIMITED COMMON ELEMENT AREAS 4, 5, 6, AND 7.

12) PROJECT IS SUBJECT TO THE CONDITIONS SET FORTH IN CITY OF PORTLAND SITE PLAN APPROVAL, SUBDIVISION APPROVAL, AND TRAFFIC MOVEMENT PERMIT; MAINE DEP NATURAL RESOURCES PROTECTION ACT AND SITE LOCATION OF DEVELOPMENT ACT DEPARTMENT ORDER; AND US ARMY CORPS OF ENGINEERS MAINE GENERAL PERMIT AUTHORIZATION. COPIES OF THESE DOCUMENTS ARE AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

13) PROJECT IS SUBJECT TO THE PLANS APPROVED UNDER SITE PLAN REVIEW BY THE CITY OF PORTLAND PLANNING AUTHORITY. COPIES OF THESE DOCUMENTS ARE AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

14) RESPONSIBILITIES FOR STORMWATER MANAGEMENT SYSTEM INSPECTIONS AND MAINTENANCE ARE IDENTIFIED WITHIN THE DECLARATION OF CONDOMINIUM. STORMWATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE REQUIREMENTS ARE IDENTIFIED IN A STORMWATER MANAGEMENT PLAN AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

MAP REFERENCES:

1) A PLAN ENTITLED "PLAN OF STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" DATED OCT. 1997 AND LAST REVISED OCT. 23, 2002, PREPARED BY LAND SERVICES INC.

LEGEND: LINETYPES & HATCH PATTERN

- ADJACENT LOT LINE
- ADJACENT R.O.W. LINE
- LOCUS BOUNDARY LINE
- OLD TRACT LINE
- EASEMENT LINE
- CONTROLLED ACCESS
- OVERHEAD ELECTRIC LINE
- SANITARY SEWER LINE
- LIMITED COMMON ELEMENT YARD LIMIT
- UNIT

LEGEND: POINT TYPES & SYMBOLS

- CONCRETE BOUND
- GRANITE BOUND TO BE SET
- PIPE
- REBAR
- SOLID SMOOTH ROD
- RAILROAD SPIKE
- HANDICAPPED SYMBOL
- UTILITY POLE
- SQUARE CATCH BASIN
- ROUND CATCH BASIN
- DRAIN MANHOLE
- LIMITED COMMON ELEMENT (L.C.E.)
- SINGLE POST SIGN
- ELECTRIC MANHOLE
- LIGHT POST
- GAS VALVE
- GAS VENT PIPE
- SEWER MANHOLE
- HYDRANT
- WATER MANHOLE
- WATER SHUT-OFF
- WATER VALVE
- DECIDUOUS TREE

GRAPHIC SCALE: 1" = 100'

100 50 0 100 200 300

EASEMENT AREA 1 — CURVE TABLE

CURVE	RADIUS	LENGTH	BEARING	CHORD DIST.
C1	250.00	30.49	S65°16'18"W	30.47
C2	74.58	64.22	N39°39'58"W	62.25
C3	170.00	56.12	N14°13'36"E	55.87
C4	1180.00	60.59	N85°30'52"W	60.58

EASEMENT AREA 1 — LINE TABLE

LINE	LENGTH	BEARING
L1	20.97	S35°54'43"E
L2	35.12	N24°30'45"W
L3	19.39	S14°11'33"W
L4	2.94	N15°00'00"W
L5	23.23	N32°26'19"E

EASEMENT AREA 2 — CURVE TABLE

CURVE	RADIUS	LENGTH	BEARING	CHORD DIST.
C5	76.54	37.59	S43°48'45"E	37.21
C6	74.00	77.50	S59°44'51"E	74.00
C7	114.00	119.39	N59°44'51"W	114.01
C8	20.00	8.26	N41°34'58"W	8.21

EASEMENT AREA 2 — LINE TABLE

LINE	LENGTH	BEARING
L6	48.58	S29°44'44"E
L7	40.00	S00°08'40"E
L8	59.04	N29°44'44"W

CERTAIN PLANNING BOARD CONDITIONS OF SUBDIVISION APPROVAL

iv.) THIS APPROVAL ENTITLES THE APPLICANT AND FUTURE DEVELOPERS OF THE OFFICE PARK UNITS TO DEVELOP THE MAXIMUM NUMBER AND SIZE OF PARKING SPACES AS SHOWN ON THE SUBDIVISION PLAT AND OVERALL SITE PLAN SUBJECT TO PROVIDING CONFIRMATION OF THE NEED FOR THESE SPACES AND SPACE DIMENSIONS (VIA A PARKING ANALYSIS) AT THE TIME THAT THE UNIT IS UNDER SITE PLAN REVIEW; AND

v.) THAT THE CONDOMINIUM ASSOCIATION SHALL DEVELOP AND MANAGE A TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN ACCEPTABLE TO THE PLANNING AUTHORITY, REVIEWED AS PART OF THE INITIAL AND SUBSEQUENT SITE PLAN APPROVALS FOR EACH BUILDING UNIT WITHIN THE LIMITED COMMON ELEMENT AREAS; AND

vi.) THAT THE DEVELOPMENT OF LIMITED COMMON ELEMENT AREAS AND UNITS IS SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF PORTLAND PLANNING AUTHORITY FOR CONFORMANCE WITH THE PORTLAND TECHNOLOGY PARK DESIGN GUIDELINES AND CITY OF PORTLAND CODE OF ORDINANCES, CHAPTER 14 LAND USE, ARTICLE V. SITE PLAN FOR BUILDING ARCHITECTURE, SITE LANDSCAPING, SITE PEDESTRIAN CIRCULATION, BICYCLE PARKING, LAMP SPECIFICATIONS AND SIGNAGE AND ANY CHANGES OR ALTERATIONS TO APPROVED TRAFFIC, PARKING, ACCESS, UTILITY, EXTERIOR LIGHTING, TREE PRESERVATION AND STORMWATER FEATURES; AND

vii.) THE CLEARING LIMITS SHALL BE RESTRICTED TO LIMITED COMMON ELEMENT (LEC) AREAS, EASEMENT AREA 1 ASSOCIATED WITH THE SITE ROADWAY; EASEMENT AREA 2 ASSOCIATED WITH ACCESS TO THE TRAIL HEAD PARKING, AND EASEMENT AREA 3 ASSOCIATED WITH THE TRAIL HEAD PARKING, AND

viii.) THAT THE APPLICANT AND ALL ASSIGNS SHALL COMPLY WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III, POST-CONSTRUCTION STORM WATER MANAGEMENT, WHICH SPECIFIES THE ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS. IHE DEVELOPER/CONTRACTOR/SUBCONTRACTOR MUST COMPLY WITH CONDITIONS OF THE CONSTRUCTION STORMWATER MANAGEMENT PLAN AND SEDIMENT & EROSION CONTROL PLAN BASED ON CITY STANDARDS AND STATE GUIDELINES; AND

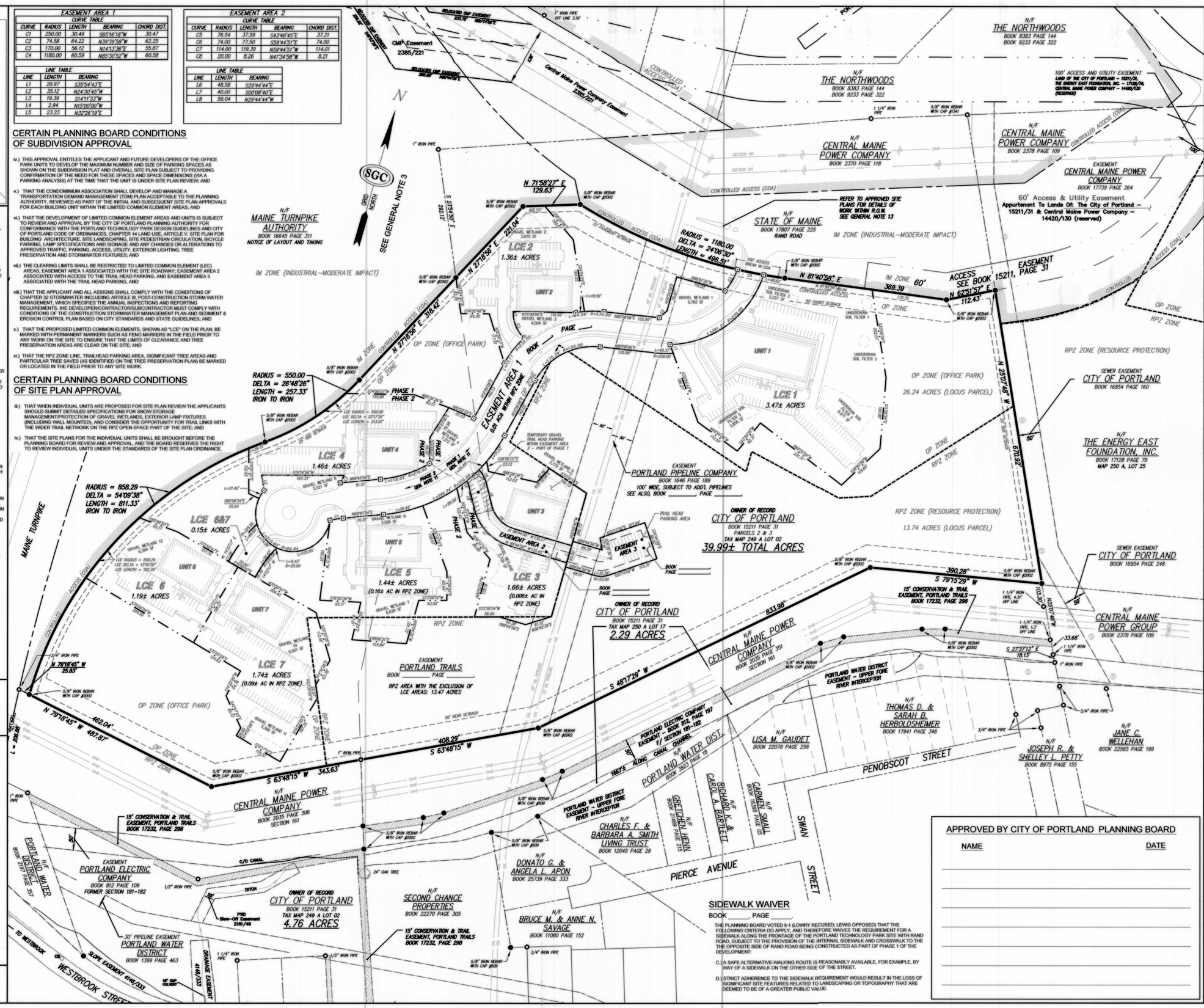
x.) THAT THE PROPOSED LIMITED COMMON ELEMENTS, SHOWN AS "LCE" ON THE PLAN, BE MARKED WITH PERMANENT MARKERS SUCH AS FENO MARKERS IN THE FIELD PRIOR TO ANY WORK ON THE SITE TO ENSURE THAT THE LIMITS OF CLEARANCE AND TREE PRESERVATION AREAS ARE CLEAR ON THE SITE; AND

xi.) THAT THE RPZ ZONE LINE, TRAILHEAD PARKING AREA, SIGNIFICANT TREE AREAS AND PARTICULAR TREE SAVES (AS IDENTIFIED ON THE TREE PRESERVATION PLAN) BE MARKED OR LOCATED IN THE FIELD PRIOR TO ANY SITE WORK.

CERTAIN PLANNING BOARD CONDITIONS OF SITE PLAN APPROVAL

iii.) THAT WHEN INDIVIDUAL UNITS ARE PROPOSED FOR SITE PLAN REVIEW THE APPLICANTS SHOULD SUBMIT DETAILED SPECIFICATIONS FOR SNOW STORAGE MANAGEMENT/PROTECTION OF GRAVEL WETLANDS, EXTERIOR LAMP FIXTURES (INCLUDING WALL MOUNTED), AND CONSIDER THE OPPORTUNITY FOR TRAIL LINKS WITH THE WIDER TRAIL NETWORK ON THE RPZ OPEN SPACE PART OF THE SITE; AND

iv.) THAT THE SITE PLANS FOR THE INDIVIDUAL UNITS SHALL BE BROUGHT BEFORE THE PLANNING BOARD FOR REVIEW AND APPROVAL, AND THE BOARD RESERVES THE RIGHT TO REVIEW INDIVIDUAL UNITS UNDER THE STANDARDS OF THE SITE PLAN ORDINANCE.



APPROVED BY CITY OF PORTLAND PLANNING BOARD

NAME	DATE

SIDEWALK WAIVER

BOOK _____, PAGE _____

THE PLANNING BOARD VOTED 5-1 (LOWRY RECUSED; LEWIS OPPOSED) THAT THE FOLLOWING CRITERIA DO APPLY, AND THEREFORE WAIVES THE REQUIREMENT FOR A SIDEWALK ALONG THE FRONTAGE OF THE PORTLAND TECHNOLOGY PARK SITE WITH RAND ROAD, SUBJECT TO THE PROVISION OF THE INTERNAL SIDEWALK AND CROSSWALK TO THE THE OPPOSITE SIDE OF RAND ROAD BEING CONSTRUCTED AS PART OF PHASE 1 OF THE DEVELOPMENT:

C.) A SAFE ALTERNATIVE-WALKING ROUTE IS REASONABLY AVAILABLE, FOR EXAMPLE, BY WAY OF A SIDEWALK ON THE OTHER SIDE OF THE STREET.

D.) 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.

CUMBERLAND COUNTY, ss REGISTRY OF DEEDS
Received: at ___h ___m ___M. and Filed in Plan Book ___ Page ___
ATTEST: _____ Register

REVISIONS: NO.	DATE	
1	9-30-2011	SUBMITTAL FOR CONCEPTUAL REVIEW
2	10-17-2011	SECOND SUBMISSION FOR REVIEW
3	1-17-2012	THIRD SUBMISSION FOR REVIEW
4	7-17-2012	FINAL SUBMISSION FOR REVIEW
5	9-25-2012	REVISED PER WOODARD & CURRAN, INC.

9/27/12

ONLY VALID WITH ORIGINAL STAMP

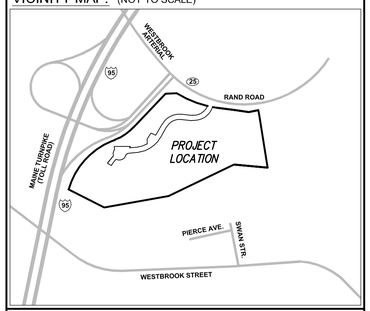
SGC ENGINEERING, LLC
• Civil Design & Survey Engineering
• Environmental & Regulatory Permitting
• Electrical Power Systems Engineering
SERVING OUR CLIENTS IN THE U.S.A. & CANADA
901 County Road, Westbrook, Maine 04092 Tel: 207-856-0277 Fax: 207-347-8101
Target Technology Center, 20 Godfrey Drive, Suite 200 Orono, Maine 04473 Tel: 207-866-6571 Fax: 207-866-6561
1600 East 200 Street, Suite 112 Fernandina Beach, FL 32031 Tel: 800-562-6974
Suite 305 Scott Blvd., Santa Clara, CA 95050

DATE: 09-28-11 | CALC: DED | PROJECT: 895001 | SHEET 1 OF 1
SCALE: 1" = 100' | DRAWN: DED | CHECK: XXX | FILE: 8N0-895001

SUBDIVISION PLAT OF PORTLAND TECHNOLOGY PARK CONDOMINIUM RAND ROAD, PORTLAND, MAINE

RECORD OWNER:
CITY OF PORTLAND - DECLARANT
389 CONGRESS STREET, PORTLAND, MAINE

VICINITY MAP: (NOT TO SCALE)



GENERAL NOTES:

1) THIS PLAN AND ALL WORK ASSOCIATED WITH IT WAS PERFORMED BY SGC ENGINEERING, LLC PURSUANT TO A PROFESSIONAL SERVICES CONTRACT BETWEEN WOODARD & CURRAN, INC. AND SGC ENGINEERING LLC, DATED SEPTEMBER 8, 2010 AND SIGNED MARCH 14, 2011.

2) REFERENCE DEED FOR THE LOCUS PARCEL IS SIMON A. SNYDER, JASON A. SNYDER, RONALD A. BARRIS, TRUSTEE OF THE THERESE BARRIS MARITAL TRUST, CYNTHIA B. BAKER, TRUSTEE OF THE THEODORE BARRIS TRUST, RONALD A. BARRIS AND CYNTHIS B. BAKER, CO-TRUSTEES OF THE BARRIS FAMILY TRUST TO THE CITY OF PORTLAND, DATED DECEMBER 7, 1999 AND RECORDED IN DEED BOOK 15211, PAGE 031 AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

3) THE BEARINGS SHOWN HEREON ARE REFER TO GRID NORTH AND ARE BASED ON PLAN REFERRED TO UNDER MAP REFERENCES, NOTE 1.

4) THE LOCUS PARCEL IS DEPICTED AS LOTS 1 & 2 IN BLOCK A ASSESSORS MAP 249. ABUTTING PROPERTY OWNER INFORMATION REFERENCED HEREON WAS TAKEN FROM THE CITY OF PORTLAND ASSESSOR'S DATA AS OF THE DATE OF THIS PLAN.

5) RAND ROAD IS A PUBLIC HIGHWAY. THE SIDELINE LOCATIONS ARE BASED ON THE PLAN REFERENCED UNDER NOTE 1 OF MAP REFERENCES BELOW AND MAINE TURNPIKE AUTHORITY PLANS ON FILE AT THE OFFICES FOR THE MAINE TURNPIKE AUTHORITY.

6) NO SUBSURFACE INVESTIGATION HAS BEEN PERFORMED BY SGC ENGINEERING, LLC. DIG-SAFE SHOULD BE CONTACTED PRIOR TO COMMENCING ANY EXCAVATION. (888-344-7233).

7) THE BOUNDARY INFORMATION ON THIS PLAN IS BASED ON THE PLAN REFERENCED UNDER NOTE 1 OF MAP REFERENCES. SGC ENGINEERING FIELD CREWS COMPLETED A SURVEY OF THE PIPELINE LOCATIONS WITHIN THE PORTLAND PIPELINE COMPANY EASEMENT AND EXISTING MONUMENTATION FOUND AND SET BY PREVIOUS SURVEY COMPLETED BY LAND SERVICES, INC., FOR THE PURPOSE OF VERIFYING THEIR EXISTENCE AND TO OVERLAY DESIGN INFORMATION WITHIN BOUNDARIES DETERMINED BY LAND SERVICES, INC. SGC ENGINEERING DID NOT CONFIRM PERIMETER BOUNDARIES BEYOND LOCATION OF MONUMENTATION.

8) REFERENCE IS HEREBY MADE TO THE PORTLAND TECHNOLOGY PARK CONDOMINIUM DECLARATION OF CONDOMINIUM, INCLUSIVE OF BYLAWS, TO BE RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS AT BOOK _____, PAGE _____.

9) ELEVATIONS ARE BASED ON NAVD 1988 DATUM.

10) CLEARING LIMITS SHALL BE RESTRICTED TO LIMITED COMMON ELEMENT AREAS, EASEMENT AREA 1 ASSOCIATED WITH THE SITE ROADWAY, EASEMENT AREA 2 ASSOCIATED WITH ACCESS TO THE TRAIL HEAD PARKING, AND EASEMENT AREA 3 ASSOCIATED WITH THE TRAIL HEAD PARKING AND 20 FT WIDE EASEMENT AREA FOR THE GAS LINE (TO EASEMENT AREA 1 NEAR LCES 5 & 7. MANAGEMENT OF THE FORESTED COMMON AREAS OUTSIDE OF THE CLEARING LIMITS SHALL BE PERFORMED IN ACCORDANCE WITH A FOREST MANAGEMENT PLAN PREPARED FOR THE CITY OF PORTLAND AND APPROVED BY THE CITY ARBORIST. MONUMENTATION OF THE CLEARING LIMIT BOUNDARIES SHALL OCCUR PRIOR TO THE START OF CONSTRUCTION.

11) PHASE 1 INCLUDES CONSTRUCTION OF ALL PROPOSED RIGHT-OF-WAY IMPROVEMENTS IN RAND ROAD; 950 LF OF PARK ROADWAY WITHIN EASEMENT AREA 1; TEMPORARY GRAVEL TRAIL HEAD PARKING AREA WITHIN EASEMENT AREA 2; TRAIL HEAD PARKING AREA WITHIN EASEMENT AREA 3; LIMITED COMMON ELEMENT AREAS 1, 2 AND 3. PHASE 2 INCLUDES CONSTRUCTION OF REMAINING 450 LF OF PARK ROADWAY WITHIN EASEMENT AREA 1 AND LIMITED COMMON ELEMENT AREAS 4, 5, 6, AND 7.

12) PROJECT IS SUBJECT TO THE CONDITIONS SET FORTH IN CITY OF PORTLAND SITE PLAN APPROVAL, SUBDIVISION APPROVAL, AND TRAFFIC MOVEMENT PERMIT; MAINE DEP NATURAL RESOURCES PROTECTION ACT AND SITE LOCATION OF DEVELOPMENT ACT DEPARTMENT ORDER; AND US ARMY CORPS OF ENGINEERS MAINE GENERAL PERMIT AUTHORIZATION. COPIES OF THESE DOCUMENTS ARE AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

13) PROJECT IS SUBJECT TO THE PLANS APPROVED UNDER SITE PLAN REVIEW BY THE CITY OF PORTLAND PLANNING AUTHORITY. COPIES OF THESE DOCUMENTS ARE AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

14) RESPONSIBILITIES FOR STORMWATER MANAGEMENT SYSTEM INSPECTIONS AND MAINTENANCE ARE IDENTIFIED WITHIN THE DECLARATION OF CONDOMINIUM. STORMWATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE REQUIREMENTS ARE IDENTIFIED IN A STORMWATER MANAGEMENT PLAN AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

MAP REFERENCES:

1) A PLAN ENTITLED "PLAN OF STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" DATED OCT. 1997 AND LAST REVISED OCT. 23, 2002, PREPARED BY LAND SERVICES INC.

LEGEND: LINETYPES & HATCH PATTERN

- ADJACENT LOT LINE
- ADJACENT R.O.W. LINE
- LOCUS BOUNDARY LINE
- OLD TRACT LINE
- EASEMENT LINE
- CONTROLLED ACCESS
- OVERHEAD ELECTRIC LINE — OHE —
- SANITARY SEWER LINE — S —
- LIMITED COMMON ELEMENT YARD LIMIT
- UNIT

LEGEND: POINT TYPES & SYMBOLS

CONCRETE BOUND	⊞	SINGLE POST SIGN	
GRANITE BOUND TO BE SET	□	ELECTRIC MANHOLE	(E)
PIPE	○	LIGHT POST	
REBAR	●	GAS VALVE	GV
SOLID SMOOTH ROD	◉	GAS VENT PIPE	GVP
RAILROAD SPIKE	◉	SEWER MANHOLE	(S)
HANDICAPPED SYMBOL		HYDRANT	
UTILITY POLE		WATER MANHOLE	(W)
SQUARE CATCH BASIN		WATER SHUT-OFF	
ROUND CATCH BASIN		WATER VALVE	
DRAIN MANHOLE	(D)	DECIDUOUS TREE	
LIMITED COMMON ELEMENT	L.C.E.		

GRAPHIC SCALE: 1" = 100'

100 50 0 100 200 300

EASEMENT AREA 1 — CURVE TABLE

CURVE	RADIUS	LENGTH	BEARING	CHORD DIST.
C1	250.00	30.49	S65°16'18"W	30.47
C2	74.58	64.22	N39°29'58"W	62.25
C3	170.00	56.12	N14°13'36"E	55.87
C4	1180.00	60.59	N85°30'52"E	60.58

EASEMENT AREA 1 — LINE TABLE

LINE	LENGTH	BEARING
L1	20.97	S35°54'43"E
L2	35.12	N24°30'45"W
L3	19.39	S14°11'33"W
L4	2.94	N15°00'00"W
L5	23.23	N32°26'19"E

EASEMENT AREA 2 — CURVE TABLE

CURVE	RADIUS	LENGTH	BEARING	CHORD DIST.
C5	76.54	37.59	S43°48'45"E	37.21
C6	74.00	77.50	S59°44'51"E	74.00
C7	114.00	119.39	N59°44'51"W	114.01
C8	20.00	8.26	N41°34'58"W	8.21

EASEMENT AREA 2 — LINE TABLE

LINE	LENGTH	BEARING
L6	48.58	S29°44'44"E
L7	40.00	S00°08'40"E
L8	59.04	N29°44'44"W

CERTAIN PLANNING BOARD CONDITIONS OF SUBDIVISION APPROVAL

iv.) THIS APPROVAL ENTITLES THE APPLICANT AND FUTURE DEVELOPERS OF THE OFFICE PARK UNITS TO DEVELOP THE MAXIMUM NUMBER AND SIZE OF PARKING SPACES AS SHOWN ON THE SUBDIVISION PLAT AND OVERALL SITE PLAN SUBJECT TO PROVIDING CONFIRMATION OF THE NEED FOR THESE SPACES AND SPACE DIMENSIONS (VIA A PARKING ANALYSIS) AT THE TIME THAT THE UNIT IS UNDER SITE PLAN REVIEW; AND

v.) THAT THE CONDOMINIUM ASSOCIATION SHALL DEVELOP AND MANAGE A TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN ACCEPTABLE TO THE PLANNING AUTHORITY, REVIEWED AS PART OF THE INITIAL AND SUBSEQUENT SITE PLAN APPROVALS FOR EACH BUILDING UNIT WITHIN THE LIMITED COMMON ELEMENT AREAS; AND

vi.) THAT THE DEVELOPMENT OF LIMITED COMMON ELEMENT AREAS AND UNITS IS SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF PORTLAND PLANNING AUTHORITY FOR CONFORMANCE WITH THE PORTLAND TECHNOLOGY PARK DESIGN GUIDELINES AND CITY OF PORTLAND CODE OF ORDINANCES, CHAPTER 14 LAND USE, ARTICLE V. SITE PLAN FOR BUILDING ARCHITECTURE, SITE LANDSCAPING, SITE PEDESTRIAN CIRCULATION, BICYCLE PARKING, LAMP SPECIFICATIONS AND SIGNAGE AND ANY CHANGES OR ALTERATIONS TO APPROVED TRAFFIC, PARKING, ACCESS, UTILITY, EXTERIOR LIGHTING, TREE PRESERVATION AND STORMWATER FEATURES; AND

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viii.) THAT THE APPLICANT AND ALL ASSIGNS SHALL COMPLY WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III, POST-CONSTRUCTION STORM WATER MANAGEMENT, WHICH SPECIFIES THE ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS. IHE DEVELOPER/CONTRACTOR/SUBCONTRACTOR MUST COMPLY WITH CONDITIONS OF THE CONSTRUCTION STORMWATER MANAGEMENT PLAN AND SEDIMENT & EROSION CONTROL PLAN BASED ON CITY STANDARDS AND STATE GUIDELINES; AND

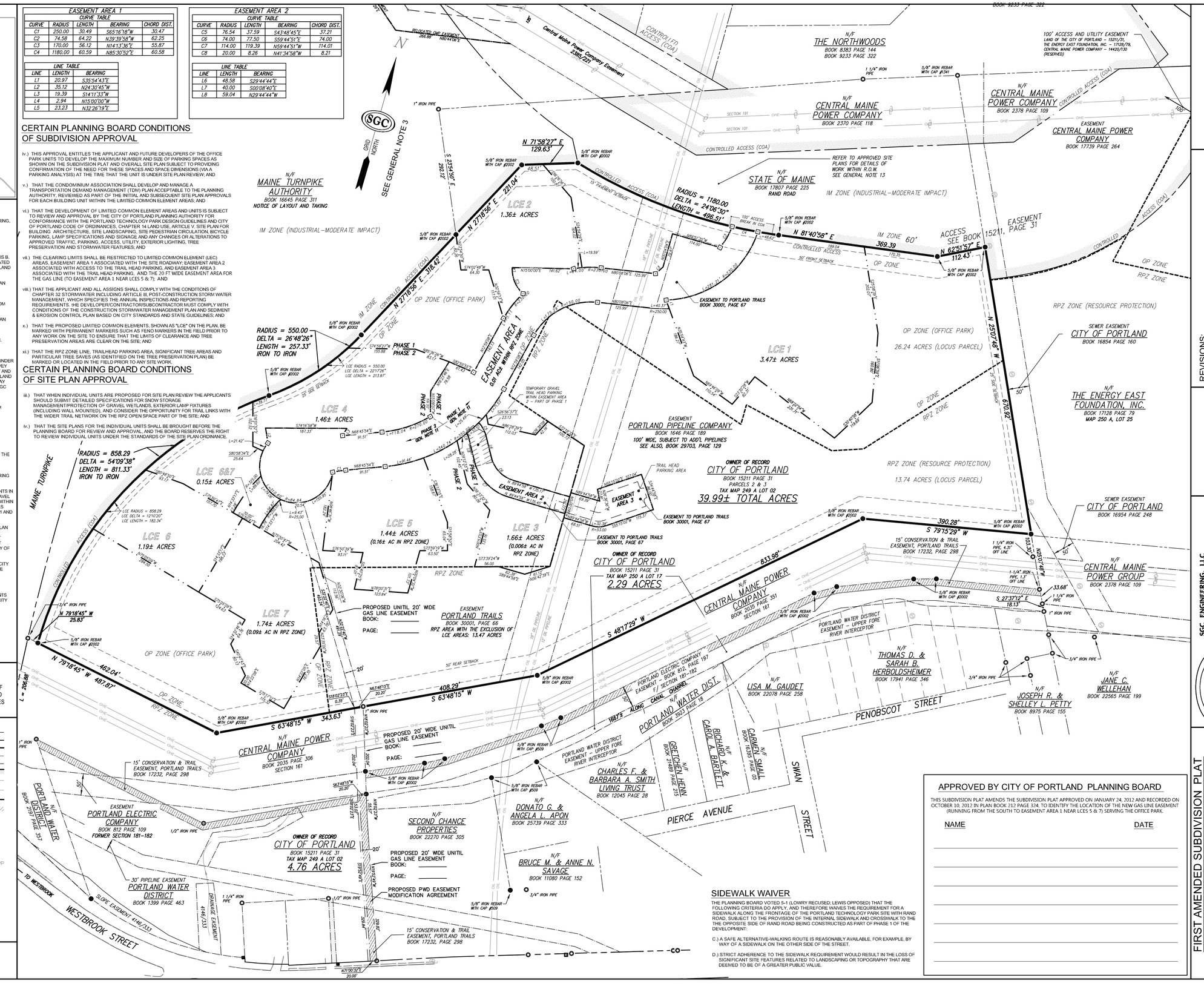
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xi.) THAT THE RPZ ZONE LINE, TRAILHEAD PARKING AREA, SIGNIFICANT TREE AREAS AND PARTICULAR TREE SAVES (AS IDENTIFIED ON THE TREE PRESERVATION PLAN) BE MARKED OR LOCATED IN THE FIELD PRIOR TO ANY SITE WORK.

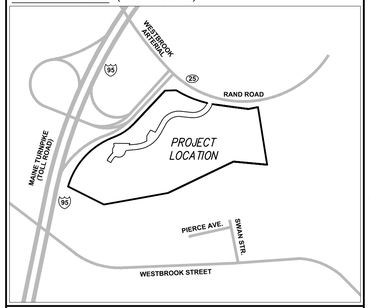
CERTAIN PLANNING BOARD CONDITIONS OF SITE PLAN APPROVAL

iii.) THAT WHEN INDIVIDUAL UNITS ARE PROPOSED FOR SITE PLAN REVIEW THE APPLICANTS SHOULD SUBMIT DETAILED SPECIFICATIONS FOR SNOW STORAGE MANAGEMENT/PROTECTION OF GRAVEL WETLANDS, EXTERIOR LAMP FIXTURES (INCLUDING WALL MOUNTED), AND CONSIDER THE OPPORTUNITY FOR TRAIL LINKS WITH THE WIDER TRAIL NETWORK ON THE RPZ OPEN SPACE PART OF THE SITE; AND

iv.) THAT THE SITE PLANS FOR THE INDIVIDUAL UNITS SHALL BE BROUGHT BEFORE THE PLANNING BOARD FOR REVIEW AND APPROVAL, AND THE BOARD RESERVES THE RIGHT TO REVIEW INDIVIDUAL UNITS UNDER THE STANDARDS OF THE SITE PLAN ORDINANCE.


N
GRID NORTH
SEE GENERAL NOTE 3
SGC
MAINE TURNPIKE AUTHORITY
NOTICE OF LAYOUT AND TAKING
IM ZONE (INDUSTRIAL-MODERATE IMPACT)
OP ZONE (OFFICE PARK)
RPZ ZONE
RPZ ZONE (RESOURCE PROTECTION)
CONTROLLED ACCESS (COA)
Central Maine Power Company Easement 2585/221
RELOCATED CMP EASEMENT 266.89' N85°44'06"E
1" IRON PIPE
S 23°54'00" E 232.12'
N 71°58'27" E 129.63'
5/8" IRON REBAR WITH CAP #2002
N 27°18'56" E 221.04'
N 27°18'56" E 316.42'
RADIUS = 1180.00
DELTA = 24°06'30"
LENGTH = 496.51'
N 81°40'58" E 369.39'
N 62°51'57" E 112.43'
N 25°07'48" W 672.02'
S 79°15'29" W 390.29'
S 27°37'17" E 18.13'
S 48°17'29" W 833.98'
N 79°18'45" W 462.04'
N 79°18'45" W 487.87'
L = 206.88
S 63°48'15" W 343.63'
S 63°48'15" W 408.29'
RADIUS = 550.00
DELTA = 26°48'26"
LENGTH = 257.33'
IRON TO IRON
RADIUS = 858.29
DELTA = 54°09'38"
LENGTH = 811.33'
IRON TO IRON
PHASE 1
PHASE 2
EASEMENT AREA 1
0.01 ACRE WITHIN RPZ ZONE
EASEMENT AREA 2
EASEMENT AREA 3
LCE 1
3.47± ACRES
LCE 2
1.36± ACRES
LCE 3
1.66± ACRES
(0.006± AC IN RPZ ZONE)
LCE 4
1.46± ACRES
LCE 5
1.44± ACRES
(0.16± AC IN RPZ ZONE)
LCE 6
1.19± ACRES
LCE 6&7
0.15± ACRES
LCE 7
1.74± ACRES
(0.09± AC IN RPZ ZONE)
LCE RADIUS = 550.00
LCE DELTA = 22°17'26"
LCE LENGTH = 213.97'
LCE RADIUS = 858.29
LCE DELTA = 12°10'20"
LCE LENGTH = 182.34'
N/F THE NORTHWOODS
BOOK 8383 PAGE 144
BOOK 9233 PAGE 322
N/F CENTRAL MAINE POWER COMPANY
BOOK 2370 PAGE 118
N/F CENTRAL MAINE POWER COMPANY
BOOK 2378 PAGE 109
EASEMENT CENTRAL MAINE POWER COMPANY
BOOK 17739 PAGE 264
100' ACCESS AND UTILITY EASEMENT LAND OF THE CITY OF PORTLAND - 15211/31, THE ENERGY EAST FOUNDATION, INC. - 17128/79, CENTRAL MAINE POWER COMPANY - 14420/130 (RESERVED)
N/F STATE OF MAINE
BOOK 17807 PAGE 225
RAND ROAD
REFER TO APPROVED SITE PLANS FOR DETAILS OF WORK WITHIN R.O.W. SEE GENERAL NOTE 13
ACCESS SEE BOOK 15211, PAGE 31
EASEMENT TO PORTLAND TRAILS BOOK 30001, PAGE 67
EASEMENT PORTLAND PIPELINE COMPANY
BOOK 1646 PAGE 189
100' WIDE, SUBJECT TO ADD'L PIPELINES SEE ALSO, BOOK 29703, PAGE 129
OWNER OF RECORD CITY OF PORTLAND
BOOK 15211 PAGE 31
TAX MAP 249 A LOT 02
39.99± TOTAL ACRES
OWNER OF RECORD CITY OF PORTLAND
BOOK 15211 PAGE 31
TAX MAP 250 A LOT 17
2.29 ACRES
OWNER OF RECORD CITY OF PORTLAND
BOOK 15211 PAGE 31
TAX MAP 249 A LOT 02
4.76 ACRES
EASEMENT PORTLAND TRAILS
BOOK 30001, PAGE 66
RPZ AREA WITH THE EXCLUSION OF LCE AREAS: 13.47 ACRES
PROPOSED UNITIL 20' WIDE GAS LINE EASEMENT BOOK: PAGE:
PROPOSED 20' WIDE UNITIL GAS LINE EASEMENT BOOK: PAGE:
PROPOSED PWD EASEMENT MODIFICATION AGREEMENT
TRAIL HEAD PARKING AREA
TEMPORARY GRAVEL TRAIL HEAD PARKING WITHIN EASEMENT AREA 2 = PART OF PHASE 1
EASEMENT TO PORTLAND TRAILS BOOK 30001, PAGE 67
EASEMENT TO PORTLAND TRAILS BOOK 30001, PAGE 67
EASEMENT TO PORTLAND TRAILS BOOK 30001, PAGE 67
EASEMENT TO PORTLAND TRAILS BOOK 30001, PAGE 67
EASEMENT TO PORTLAND TRAILS BOOK 30001, PAGE 67
EASEMENT PORTLAND TRAILS BOOK 30001, PAGE 67
EASEMENT TO

VICINITY MAP: (NOT TO SCALE)



GENERAL NOTES:

1) THIS PLAN AND ALL WORK ASSOCIATED WITH IT WAS PERFORMED BY SGC ENGINEERING, LLC PURSUANT TO A PROFESSIONAL SERVICES CONTRACT BETWEEN WOODARD & CURRAN, INC. AND SGC ENGINEERING LLC, DATED SEPTEMBER 8, 2010 AND SIGNED MARCH 14, 2011.

2) REFERENCE DEED FOR THE LOCUS PARCEL IS SIMON A. SNYDER, JASON A. SNYDER, RONALD A. BARRIS, TRUSTEE OF THE THERESE BARRIS MARITAL TRUST, CYNTHIA B. BAKER, TRUSTEE OF THE THEODORE BARRIS TRUST, RONALD A. BARRIS AND CYNTHIS B. BAKER, CO-TRUSTEES OF THE BARRIS FAMILY TRUST TO THE CITY OF PORTLAND, DATED DECEMBER 7, 1999 AND RECORDED IN DEED BOOK 15211, PAGE 031 AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS.

3) THE BEARINGS SHOWN HEREON ARE REFER TO GRID NORTH AND ARE BASED ON PLAN REFERRED TO UNDER MAP REFERENCES, NOTE 1.

4) THE LOCUS PARCEL IS DEPICTED AS LOTS 1 & 2 IN BLOCK A ASSESSORS MAP 249. ABUTTING PROPERTY OWNER INFORMATION REFERENCED HEREON WAS TAKEN FROM THE CITY OF PORTLAND ASSESSORS DATA AS OF THE DATE OF THIS PLAN.

5) RAND ROAD IS A PUBLIC HIGHWAY, THE SIDELINE LOCATIONS ARE BASED ON THE PLAN REFERENCED UNDER NOTE 1 OF MAP REFERENCES BELOW AND MAINE TURNPIKE AUTHORITY PLANS ON FILE AT THE OFFICES FOR THE MAINE TURNPIKE AUTHORITY.

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10) CLEARING LIMITS SHALL BE RESTRICTED TO LIMITED COMMON ELEMENT AREAS, EASEMENT AREA 1 ASSOCIATED WITH THE SITE ROADWAY, EASEMENT AREA 2 ASSOCIATED WITH ACCESS TO THE TRAIL HEAD PARKING, AND EASEMENT AREA 3 ASSOCIATED WITH THE TRAIL HEAD PARKING AND 20 FT WIDE EASEMENT AREA FOR THE GAS LINE (TO EASEMENT AREA 1 NEAR LCES 5 & 7. MANAGEMENT OF THE FORESTED COMMON AREAS OUTSIDE OF THE CLEARING LIMITS SHALL BE PERFORMED IN ACCORDANCE WITH A FOREST MANAGEMENT PLAN PREPARED FOR THE CITY OF PORTLAND AND APPROVED BY THE CITY ARBORIST. MONUMENTATION OF THE CLEARING LIMIT BOUNDARIES SHALL OCCUR PRIOR TO THE START OF CONSTRUCTION.

11) PHASE 1 INCLUDES CONSTRUCTION OF ALL PROPOSED RIGHT-OF-WAY IMPROVEMENTS IN RAND ROAD; _____

12) PROJECT IS SUBJECT TO THE CONDITIONS SET FORTH IN CITY OF PORTLAND SITE PLAN APPROVAL, SUBDIVISION APPROVAL, AND TRAFFIC MOVEMENT PERMIT; MAINE DEP NATURAL RESOURCES PROTECTION ACT AND SITE LOCATION OF DEVELOPMENT ACT DEPARTMENT ORDER; AND US ARMY CORPS OF ENGINEERS MAINE GENERAL PERMIT AUTHORIZATION. COPIES OF THESE DOCUMENTS ARE AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

13) PROJECT IS SUBJECT TO THE PLANS APPROVED UNDER SITE PLAN REVIEW BY THE CITY OF PORTLAND PLANNING AUTHORITY. COPIES OF THESE DOCUMENTS ARE AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

14) RESPONSIBILITIES FOR STORMWATER MANAGEMENT SYSTEM INSPECTIONS AND MAINTENANCE ARE IDENTIFIED WITHIN THE DECLARATION OF CONDOMINIUM. STORMWATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE REQUIREMENTS ARE IDENTIFIED IN A STORMWATER MANAGEMENT PLAN AVAILABLE THROUGH THE CITY OF PORTLAND ECONOMIC DEVELOPMENT OFFICE.

MAP REFERENCES:

1) A PLAN ENTITLED "PLAN OF STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" DATED OCT. 1997 AND LAST REVISED OCT. 23, 2002, PREPARED BY LAND SERVICES INC.

LEGEND: LINETYPES & HATCH PATTERN

- ADJACENT LOT LINE
- ADJACENT R.O.W. LINE
- LOCUS BOUNDARY LINE
- OLD TRACT LINE
- EASEMENT LINE
- CONTROLLED ACCESS
- OVERHEAD ELECTRIC LINE — OHE —
- SANITARY SEWER LINE — S —
- LIMITED COMMON ELEMENT YARD LIMIT
- UNIT

LEGEND: POINT TYPES & SYMBOLS

CONCRETE BOUND		SINGLE POST SIGN	
GRANITE BOUND TO BE SET		ELECTRIC MANHOLE	(E)
PIPE		LIGHT POST	
REBAR		GAS VALVE	GV
SOLID SMOOTH ROD		GAS VENT PIPE	GVP
RAILROAD SPIKE		SEWER MANHOLE	(S)
HANDICAPPED SYMBOL		HYDRANT	
UTILITY POLE		WATER MANHOLE	(W)
SQUARE CATCH BASIN		WATER SHUT-OFF	
ROUND CATCH BASIN		WATER VALVE	
DRAIN MANHOLE	(D)	DECIDUOUS TREE	
LIMITED COMMON ELEMENT	L.C.E.		

GRAPHIC SCALE: 1" = 100'

100 50 0 100 200 300

EASEMENT AREA 1

CURVE TABLE

CURVE	RADIUS	LENGTH	BEARING	CHORD DIST.
C1	250.00	30.49	S65°16'18"W	30.47
C2	74.58	64.22	N39°39'58"W	62.25
C3	170.00	56.12	N14°13'36"E	55.87
C4	1180.00	60.59	N85°30'52"E	60.58
C9	350.00	25.49	S26°46'56"W	25.49

LINE TABLE

LINE	LENGTH	BEARING
L1	20.97	S35°54'43"E
L3	8.11	N63°52'43"W
L4	2.94	N15°00'00"W
L5	23.23	N32°26'19"E
L6	5.88	N65°00'00"E

EASEMENT AREA 2

CURVE TABLE

CURVE	RADIUS	LENGTH	BEARING	CHORD DIST.
C5	76.54	37.59	S43°48'45"E	37.21
C6	74.00	77.50	S59°44'51"E	74.00
C7	114.00	119.39	N59°44'51"W	114.01
C8	20.00	8.26	N41°34'58"W	8.21

LINE TABLE

LINE	LENGTH	BEARING
L6	48.58	S29°44'44"E
L7	40.00	S00°08'40"E
L8	59.04	N29°44'44"W

CERTAIN PLANNING BOARD CONDITIONS OF SUBDIVISION APPROVAL

iv.) THIS APPROVAL ENTITLES THE APPLICANT AND FUTURE DEVELOPERS OF THE OFFICE PARK UNITS TO DEVELOP THE MAXIMUM NUMBER AND SIZE OF PARKING SPACES AS SHOWN ON THE SUBDIVISION PLAT AND OVERALL SITE PLAN SUBJECT TO PROVIDING CONFIRMATION OF THE NEED FOR THESE SPACES AND SPACE DIMENSIONS (VIA A PARKING ANALYSIS) AT THE TIME THAT THE UNIT IS UNDER SITE PLAN REVIEW; AND

v.) THAT THE CONDOMINIUM ASSOCIATION SHALL DEVELOP AND MANAGE A TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN ACCEPTABLE TO THE PLANNING AUTHORITY, REVIEWED AS PART OF THE INITIAL AND SUBSEQUENT SITE PLAN APPROVALS FOR EACH BUILDING UNIT WITHIN THE LIMITED COMMON ELEMENT AREAS; AND

vi.) THAT THE DEVELOPMENT OF LIMITED COMMON ELEMENT AREAS AND UNITS IS SUBJECT TO REVIEW AND APPROVAL BY THE CITY OF PORTLAND PLANNING AUTHORITY FOR CONFORMANCE WITH THE PORTLAND TECHNOLOGY PARK DESIGN GUIDELINES AND CITY OF PORTLAND CODE OF ORDINANCES, CHAPTER 14 LAND USE, ARTICLE V. SITE PLAN FOR BUILDING ARCHITECTURE, SITE LANDSCAPING, SITE PEDESTRIAN CIRCULATION, BICYCLE PARKING, LAMP SPECIFICATIONS AND SIGNAGE AND ANY CHANGES OR ALTERATIONS TO APPROVED TRAFFIC, PARKING, ACCESS, UTILITY, EXTERIOR LIGHTING, TREE PRESERVATION AND STORMWATER FEATURES; AND

vii.) THE CLEARING LIMITS SHALL BE RESTRICTED TO LIMITED COMMON ELEMENT (LEC) AREAS, EASEMENT AREA 1 ASSOCIATED WITH THE SITE ROADWAY; EASEMENT AREA 2 ASSOCIATED WITH ACCESS TO THE TRAIL HEAD PARKING, AND EASEMENT AREA 3 ASSOCIATED WITH THE TRAIL HEAD PARKING, AND THE 20 FT WIDE EASEMENT AREA FOR THE GAS LINE (TO EASEMENT AREA 1 NEAR LCES 5 & 7); AND

viii.) THAT THE APPLICANT AND ALL ASSIGNS SHALL COMPLY WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III. POST-CONSTRUCTION STORM WATER MANAGEMENT, WHICH SPECIFIES THE ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS. IHE DEVELOPER/CONTRACTOR/SUBCONTRACTOR MUST COMPLY WITH CONDITIONS OF THE CONSTRUCTION STORMWATER MANAGEMENT PLAN AND SEDIMENT & EROSION CONTROL PLAN BASED ON CITY STANDARDS AND STATE GUIDELINES; AND

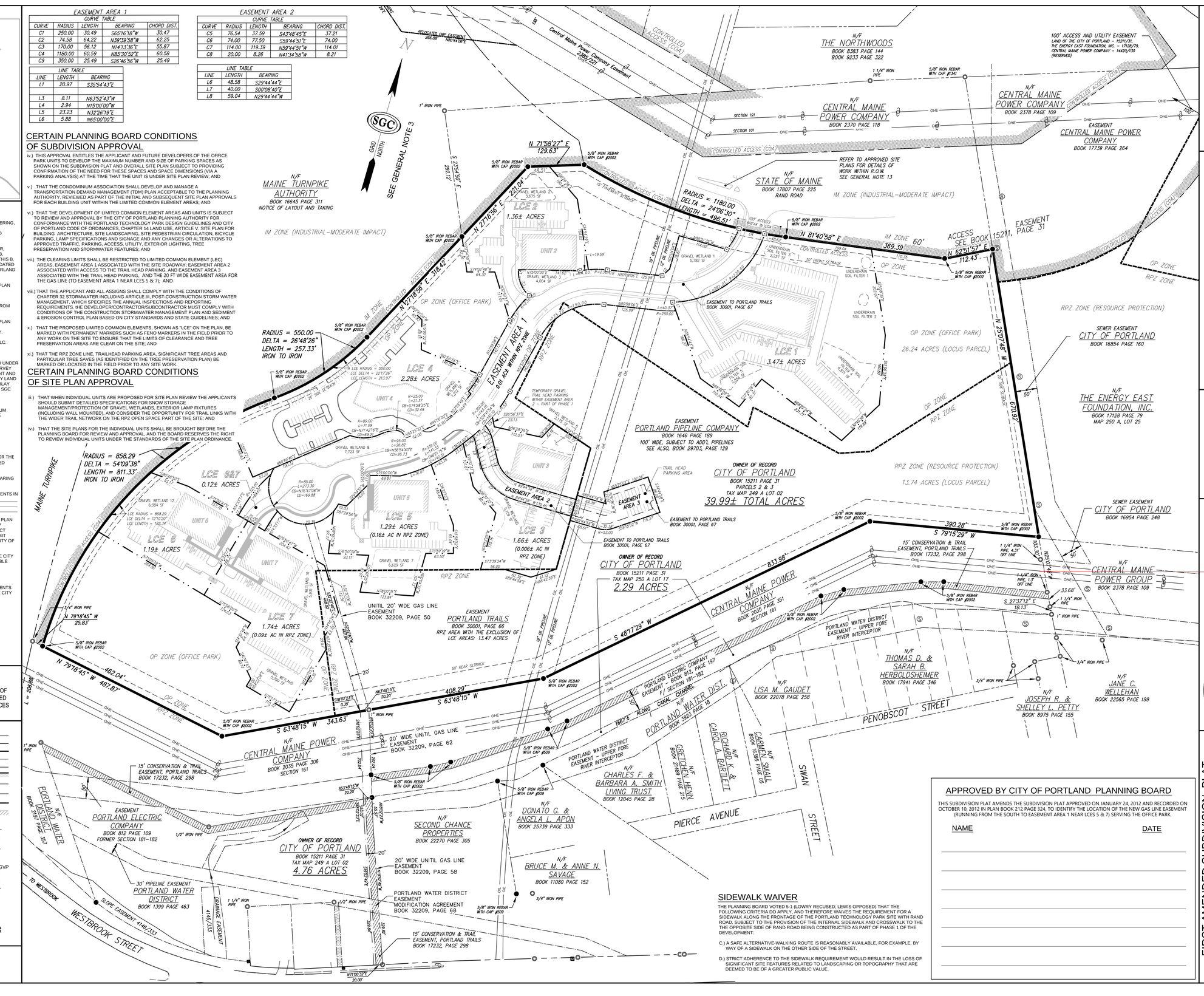
x.) THAT THE PROPOSED LIMITED COMMON ELEMENTS, SHOWN AS "LCE" ON THE PLAN, BE MARKED WITH PERMANENT MARKERS SUCH AS FENO MARKERS IN THE FIELD PRIOR TO ANY WORK ON THE SITE TO ENSURE THAT THE LIMITS OF CLEARANCE AND TREE PRESERVATION AREAS ARE CLEAR ON THE SITE; AND

xi.) THAT THE RPZ ZONE LINE, TRAILHEAD PARKING AREA, SIGNIFICANT TREE AREAS AND PARTICULAR TREE SAVES (AS IDENTIFIED ON THE TREE PRESERVATION PLAN) BE MARKED OR LOCATED IN THE FIELD PRIOR TO ANY SITE WORK.

CERTAIN PLANNING BOARD CONDITIONS OF SITE PLAN APPROVAL

iii.) THAT WHEN INDIVIDUAL UNITS ARE PROPOSED FOR SITE PLAN REVIEW THE APPLICANTS SHOULD SUBMIT DETAILED SPECIFICATIONS FOR SNOW STORAGE MANAGEMENT/PROTECTION OF GRAVEL WETLANDS, EXTERIOR LAMP FIXTURES (INCLUDING WALL MOUNTED), AND CONSIDER THE OPPORTUNITY FOR TRAIL LINKS WITH THE WIDER TRAIL NETWORK ON THE RPZ OPEN SPACE PART OF THE SITE; AND

iv.) THAT THE SITE PLANS FOR THE INDIVIDUAL UNITS SHALL BE BROUGHT BEFORE THE PLANNING BOARD FOR REVIEW AND APPROVAL, AND THE BOARD RESERVES THE RIGHT TO REVIEW INDIVIDUAL UNITS UNDER THE STANDARDS OF THE SITE PLAN ORDINANCE.



SIDEWALK WAIVER

THE PLANNING BOARD VOTED 5-1 (LOWRY RECUSED; LEWIS OPPOSED) THAT THE FOLLOWING CRITERIA DO APPLY, AND THEREFORE WAIVES THE REQUIREMENT FOR A SIDEWALK ALONG THE FRONTAGE OF THE PORTLAND TECHNOLOGY PARK SITE WITH RAND ROAD, SUBJECT TO THE PROVISION OF THE INTERNAL SIDEWALK AND CROSSWALK TO THE THE OPPOSITE SIDE OF RAND ROAD BEING CONSTRUCTED AS PART OF PHASE 1 OF THE DEVELOPMENT:

C.) A SAFE ALTERNATIVE-WALKING ROUTE IS REASONABLY AVAILABLE, FOR EXAMPLE, BY WAY OF A SIDEWALK ON THE OTHER SIDE OF THE STREET.

D.) 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.

APPROVED BY CITY OF PORTLAND PLANNING BOARD

THIS SUBDIVISION PLAT AMENDS THE SUBDIVISION PLAT APPROVED ON JANUARY 24, 2012 AND RECORDED ON OCTOBER 10, 2012 IN PLAN BOOK 212 PAGE 324, TO IDENTIFY THE LOCATION OF THE NEW GAS LINE EASEMENT (RUNNING FROM THE SOUTH TO EASEMENT AREA 1 NEAR LCES 5 & 7) SERVING THE OFFICE PARK.

NAME	DATE

CUMBERLAND COUNTY, ss REGISTRY OF DEEDS
Received : at ___h ___m ___M., and Filed in Plan Book ___ Page ___
ATTEST: _____ Register

REVISIONS:

NO.	DATE	
1	9-30-2011	SUBMITTAL FOR CONCEPTUAL REVIEW
2	10-17-2011	SECOND SUBMISSION FOR REVIEW
3	1-17-2012	THIRD SUBMISSION FOR REVIEW
4	7-17-2012	FINAL SUBMISSION FOR REVIEW
5	9-25-2012	REVISED PER WOODARD & CURRAN, INC.
6	2-12-2015	ADD GAS EASEMENT
7	5-1-2015	REVISED PER PLANNING BOARD HEARING
8	9-28-15	REVISED LCE 4 AND ROAD BOUNDARY

SGC ENGINEERING, LLC
• Civil Design & Survey Engineering
• Environmental & Regulatory Permitting
• Electrical Power Systems Engineering
SERVING OUR CLIENTS IN THE U.S.A. & CANADA
501 County Road, Westbrook, Maine 04092, Tel: 207-347-8101, Fax: 207-347-8103
Target Technology Center, 20 Corporate Drive, Orono, Maine 04473, Tel: 207-866-4571, Fax: 207-866-4572
69 Swift Street, South Burlington, VT 05403, Tel: 802-863-1199, Fax: 802-863-1199
1900 East 20th Street Suite N2, Fairmont, WV 26554, Tel: 304-534-0974

DATE: 09-29-11
SCALE: 1" = 100'
CALC: DED
DRAWN: DED
CHECK: JAK
PROJECT: 695001
FILE: BND-695001 (r1)
SHEET 1 OF 1

ONLY VALID WITH ORIGINAL STAMP

FIRST AMENDED SUBDIVISION PLAT OF PORTLAND TECHNOLOGY PARK CONDOMINIUM

RAND ROAD, PORTLAND, MAINE

RECORD OWNER:

CITY OF PORTLAND - DECLARANT

389 CONGRESS STREET, PORTLAND, MAINE

Calculation for Tree Preservation within Setback

City Code of Ordinances

Sec. 14-526. Site plan standards (b) Environmental Quality Standards .2. Landscaping and Landscape Preservation: a. Landscape Preservation (ii) All development subject to zoning setbacks shall preserve a minimum of 30% of existing trees ten (10) inches DBH or greater w ithin the required setback area.

		Length Along PL (ft)	Setback Depth (ft)	Area (ft²)
Preservation within Setback	P1	283	50	14,150
	P2	130	50	6,500
	P3	120	50	6,000
	P4	122	50	6,100
	P5	382	25	9,050
	P6	295	25	7,375
	P7	244	25	6,100
	P8	777	25	19,425
			Total Area Preserved	74,700
			% Trees Preserved within Setbacks*	**68%**
			Minimum % Required	*30%*

		Length Along PL (ft)	Setback Depth (ft)	Area (ft²)
Clearing within Setback	C1	315	50	15,750
	C2	49	50	2,450
	C3	221	25	5,525
	C4	255	25	6,375
	C5	182	25	4,550
			Total Area Cleared	34,650
			% Trees Cleared within Setbacks*	**32%**
			Maximum % Allowed	70%

P1,2,3... = Length of Tree Preservation within setback; refer to dimensions noted on Plan
C1,2,3... = Length of Tree Clearing within setback; refer to dimensions noted on Plan

***Note:** Actual number of trees with DBH 10" or greater was not documented due to the property size and extensive tree growth. Size and distribution of tree growth is relatively even across site, as confirmed by Jeff Tarling, City Arborist. Calculation assumes that an even distribution of trees of 10" and greater exists in all forested areas within the property setbacks.

LCE #4

RAND ROAD

MAINE TURNPIKE EXIT 47

INTERSTATE ROUTE 95

AREAS WITHIN SETBACK THAT WERE PREVIOUSLY CLEARED

TREES TO BE PRESERVED WITHIN R.O.W.

PROPOSED TREES ALONG PORTLAND TECHNOLOGY PARK ROADWAY. REFER TO TREE COMPENSATION CALCULATIONS.

100' PROPOSED PORTLAND PIPELINE EASEMENT

EASEMENT AREA 1: PERMITTED CLEARING LIMIT

LIMITED COMMON ELEMENT LINE: PERMITTED CLEARING LIMIT

OP ZONE (OFFICE PARK)

RP ZONE (RESOURCE PROTECTION)

15' PAVING SETBACK

50' FRONT YARD

25' SIDE YARD

50' REAR YARD

SOURCE:

2006 AERIAL IMAGE PROVIDED BY CITY OF PORTLAND DEPARTMENT OF PUBLIC SERVICES

BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

CITY REVIEW SET
NOT FOR CONSTRUCTION

LEGEND:

- PAVEMENT
- CLEARED LANDSCAPED AREA
- BUILDING
- "SIGNIFICANT" TREE OR CLUSTER IDENTIFIED BY WOODLOT
- REMOVAL OF "SIGNIFICANT" TREE OR CLUSTER
- PROTECTION OF "SIGNIFICANT" TREE OR CLUSTER DURING CONSTRUCTION
- PROPOSED TREES

NOTES:

WOODLOT ALTERNATIVES, INC. PERFORMED AN ASSESSMENT OF SIGNIFICANT TREE RESOURCES ON THE PROJECT PARCEL ON APRIL 3, 2007. TREES WITH POTENTIAL SIGNIFICANCE WITH REGARDS TO AGE, SIZE, FORM, FUNCTION, AND/OR SPECIES WERE IDENTIFIED AND ARE INDICATED ON THE PLAN. SOME OF THE TREES OR TREE CLUSTERS IDENTIFIED IN THE WOODLOT STUDY WILL BE REMOVED AS PART OF THE PROJECT. THE EXACT NUMBER IS UNKNOWN, AS THE STUDY DID NOT IDENTIFY THE EXACT NUMBER OF TREES INCLUDED IN EACH CLUSTER; HOWEVER, WE ESTIMATE THAT THE FULL BUILD-OUT OF THE PROJECT WILL RESULT IN THE REMOVAL OF APPROXIMATELY 7 SIGNIFICANT TREE CLUSTERS OR INDIVIDUAL TREES IDENTIFIED IN THE STUDY. THE PROJECT PROPOSES A TOTAL OF 44 NEW TREES ALONG THE PARK ROADWAY, CLUSTERED OR LOCATED IN A MANNER THAT BLENDS WITH THE ADJACENT, PRESERVED FORESTED AREAS OF THE SITE. SIGNIFICANT TREES OR TREE CLUSTERS THAT RESIDE ADJACENT TO BUT NOT WITHIN THE PROPOSED WORK AREAS ARE IDENTIFIED FOR PRESERVATION ON THE SITE PLANS, WITH SPECIFIC CALL-OUTS AND DETAILS FOR TREE PROTECTION.

EASEMENT AREAS 1, 2 & 3 AND THE LIMITED COMMON ELEMENT LINES NOTED ON THE SUBDIVISION RECORDING PLAT DICTATE THE PERMITTED CLEARING LIMITS OF THE SITE. A FOREST MANAGEMENT PLAN IS BEING PREPARED FOR THE PROJECT SITE, AND WILL DICTATE THE FOREST MANAGEMENT PRACTICES IN THE COMMON ELEMENT AREAS OF THE SITE. THE CLEARING LIMITS WILL BE FIELD DELINEATED WITH SURVEY MARKERS OR SIGNS APPROVED BY THE CITY PRIOR TO CONSTRUCTION. LIMITED CLEARING MAY OCCUR WITHIN THE LIMITED COMMON ELEMENT AREAS PRIOR TO DEVELOPMENT OF THE BUILDING SITES. THIS WORK WILL BE PERFORMED AT THE DIRECTION OF A PROFESSIONAL FORESTER UNDER CONTRACT WITH THE CITY, WITH OVERSIGHT BY THE CITY'S ARBORIST.

WOODARD & CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

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DAVID A. SIMPSON — 10091 — LICENSED PROFESSIONAL ENGINEER — STATE OF MAINE — JANUARY 13, 2012

REV	DESCRIPTION	DATE

DESIGNED BY: MKC | CHECKED BY: DAS
DRAWN BY: JDE | 203848.63-TP-01.dwg

TREE PRESERVATION PLAN

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE

PORTLAND TECHNOLOGY PARK

JOB NO.: 203848.63
DATE: JANUARY 13, 2012
SCALE: 1"=100'
SHEET: OF

TP-01

\\BANGOR\Projects\30000 Bangor General Office\203848.63\Rand Road\CAD in Progress\203848.63-TP-01.dwg, Jan 13, 2012 - 1:43pm

Calculation for Tree Preservation within Setback

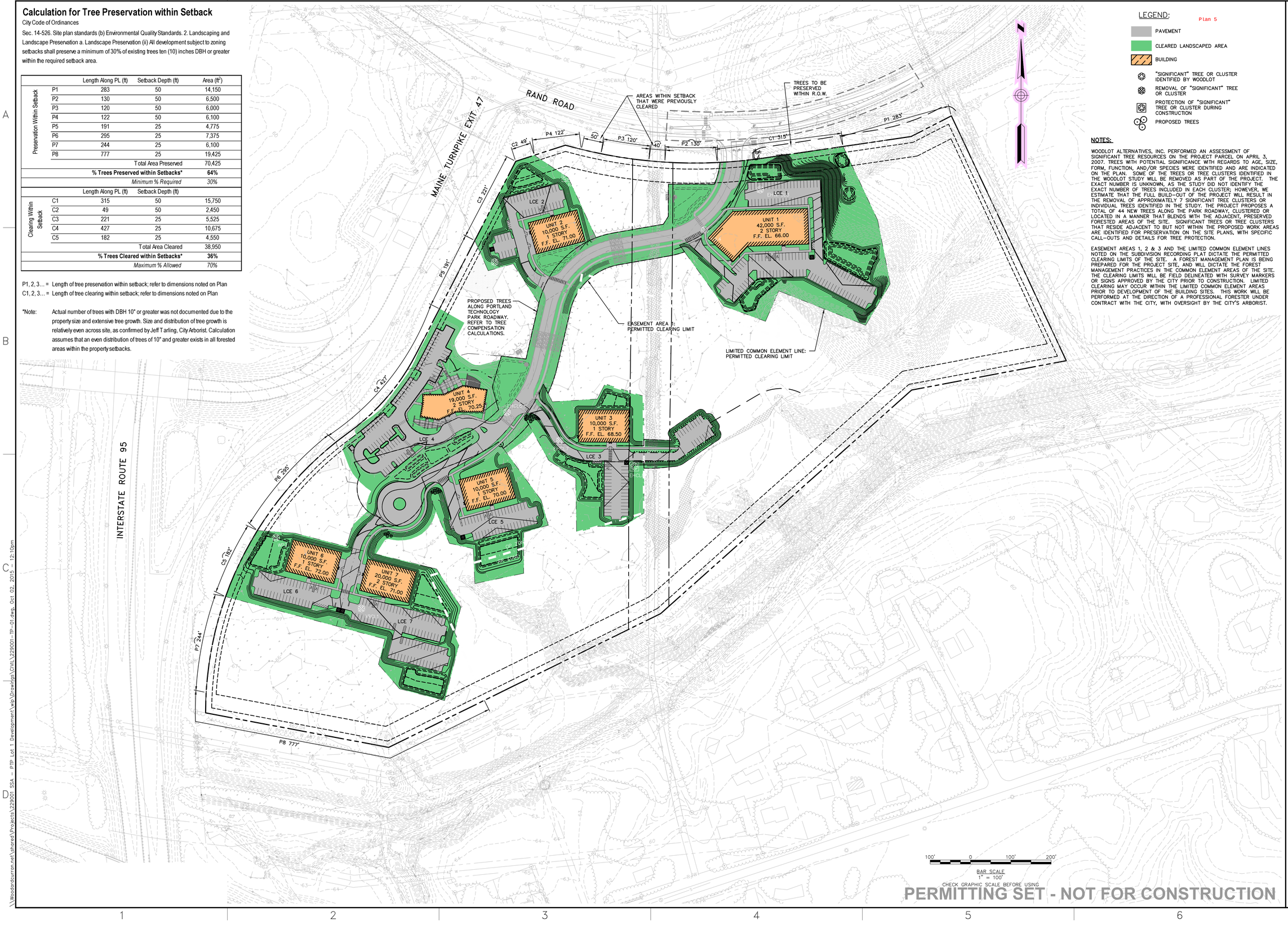
City Code of Ordinances

Sec. 14-526. Site plan standards (b) Environmental Quality Standards. 2. Landscaping and Landscape Preservation a. Landscape Preservation (ii) All development subject to zoning setbacks shall preserve a minimum of 30% of existing trees ten (10) inches DBH or greater within the required setback area.

		Length Along PL (ft)	Setback Depth (ft)	Area (ft²)
Preservation Within Setback	P1	283	50	14,150
	P2	130	50	6,500
	P3	120	50	6,000
	P4	122	50	6,100
	P5	191	25	4,775
	P6	295	25	7,375
	P7	244	25	6,100
	P8	777	25	19,425
			Total Area Preserved	70,425
			% Trees Preserved within Setbacks*	**64%**
			Minimum % Required	*30%*
		Length Along PL (ft)	Setback Depth (ft)	
Clearing Within Setback	C1	315	50	15,750
	C2	49	50	2,450
	C3	221	25	5,525
	C4	427	25	10,675
	C5	182	25	4,550
			Total Area Cleared	38,950
			% Trees Cleared within Setbacks*	**36%**
			Maximum % Allowed	*70%*

P1, 2, 3... = Length of tree preservation within setback; refer to dimensions noted on Plan
C1, 2, 3... = Length of tree clearing within setback; refer to dimensions noted on Plan

*Note: Actual number of trees with DBH 10" or greater was not documented due to the property size and extensive tree growth. Size and distribution of tree growth is relatively even across site, as confirmed by Jeff Tarling, City Arborist. Calculation assumes that an even distribution of trees of 10" and greater exists in all forested areas within the property setbacks.



LEGEND: Plan 5

- PAVEMENT
- CLEARED LANDSCAPED AREA
- BUILDING
- "SIGNIFICANT" TREE OR CLUSTER IDENTIFIED BY WOODLOT
- REMOVAL OF "SIGNIFICANT" TREE OR CLUSTER
- PROTECTION OF "SIGNIFICANT" TREE OR CLUSTER DURING CONSTRUCTION
- PROPOSED TREES

NOTES:

WOODLOT ALTERNATIVES, INC. PERFORMED AN ASSESSMENT OF SIGNIFICANT TREE RESOURCES ON THE PROJECT PARCEL ON APRIL 3, 2007. TREES WITH POTENTIAL SIGNIFICANCE WITH REGARDS TO AGE, SIZE, FORM, FUNCTION, AND/OR SPECIES WERE IDENTIFIED AND ARE INDICATED ON THE PLAN. SOME OF THE TREES OR TREE CLUSTERS IDENTIFIED IN THE WOODLOT STUDY WILL BE REMOVED AS PART OF THE PROJECT. THE EXACT NUMBER IS UNKNOWN, AS THE STUDY DID NOT IDENTIFY THE EXACT NUMBER OF TREES INCLUDED IN EACH CLUSTER; HOWEVER, WE ESTIMATE THAT THE FULL BUILD-OUT OF THE PROJECT WILL RESULT IN THE REMOVAL OF APPROXIMATELY 7 SIGNIFICANT TREE CLUSTERS OR INDIVIDUAL TREES IDENTIFIED IN THE STUDY. THE PROJECT PROPOSES A TOTAL OF 44 NEW TREES ALONG THE PARK ROADWAY, CLUSTERED OR LOCATED IN A MANNER THAT BLENDS WITH THE ADJACENT, PRESERVED FORESTED AREAS OF THE SITE. SIGNIFICANT TREES OR TREE CLUSTERS THAT RESIDE ADJACENT TO BUT NOT WITHIN THE PROPOSED WORK AREAS ARE IDENTIFIED FOR PRESERVATION ON THE SITE PLANS, WITH SPECIFIC CALL-OUTS AND DETAILS FOR TREE PROTECTION.

EASEMENT AREAS 1, 2 & 3 AND THE LIMITED COMMON ELEMENT LINES NOTED ON THE SUBDIVISION RECORDING PLAT DICTATE THE PERMITTED CLEARING LIMITS OF THE SITE. A FOREST MANAGEMENT PLAN IS BEING PREPARED FOR THE PROJECT SITE, AND WILL DICTATE THE FOREST MANAGEMENT PRACTICES IN THE COMMON ELEMENT AREAS OF THE SITE. THE CLEARING LIMITS WILL BE FIELD DELINEATED WITH SURVEY MARKERS OR SIGNS APPROVED BY THE CITY PRIOR TO CONSTRUCTION. LIMITED CLEARING MAY OCCUR WITHIN THE LIMITED COMMON ELEMENT AREAS PRIOR TO DEVELOPMENT OF THE BUILDING SITES. THIS WORK WILL BE PERFORMED AT THE DIRECTION OF A PROFESSIONAL FORESTER UNDER CONTRACT WITH THE CITY, WITH OVERSIGHT BY THE CITY'S ARBORIST.

BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

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DAVID A. SENUS 10791 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER
10/2/2015

REV	DESCRIPTION	DATE
DESIGNED BY: MKS/JLS	CHECKED BY: DAS	
DRAWN BY: JSC	229001-TP-01.dwg	

TREE PRESERVATION PLAN

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: OF

TP-01

\\Woodardcurran.net\shared\Projects\229001 SSA - PTP Lot 1 Development\wip\Drawings\Civil\229001 - TP-01.dwg, Oct 02, 2015 - 12:10pm

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
2. BOUNDARY, SITE, AND TOPOGRAPHIC FEATURES FOR CITY OWNED PARCELS THAT COMPOSE THE PROJECT AREA ORIGINATE FROM A PLAN BY LAND SERVICES, INC. "STANDARD BOUNDARY SURVEY, PROPERTY OF THE CITY OF PORTLAND, WESTBROOK STREET, PORTLAND, MAINE" PROJECT 99148 SHEET 1 OF 1 DATED OCT., 1997 WITH A FINAL REVISION DATE OF OCT. 23, 2002. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH ONE FOOT CONTOUR INTERVALS
3. SITE AND TOPOGRAPHIC FEATURES FOR ADJACENT ROADWAY AND ABUTTING PARCELS ORIGINATE FROM CITY OF PORTLAND, ME AERIAL SURVEY COMPILED USING 2000 AERIAL IMAGES BY BRADSTREET CONSULTANTS OF MANCHESTER, MAINE. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH TWO FOOT CONTOUR INTERVALS.
4. WETLAND DELINEATION FOR WETLAND AREAS LABELED #1–22 CONDUCTED BY DAMES & MOORE APRIL – MAY, 1998, AS DESCRIBED IN "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" REPORT DATED MAY 1998. WETLAND DELINEATION FIELD VERIFIED BY U.S. ARMY CORPS OF ENGINEERS ON MAY 8, 1998. FLAGS LOCATED BY SURVEY WORKS, INC. USING GPS, MAY 1998.
5. FIELD RECONNAISSANCE AND VISUAL VERIFICATION OF THE WETLANDS PREVIOUSLY DELINEATED BY DAMES & MOORE IN APRIL AND MAY OF 1998 WAS PERFORMED BY SW COLE ENGINEERING INC. IN NOVEMBER AND DECEMBER OF 2006, AND SUMMARIZED IN A LETTER REPORT DATED DECEMBER 15, 2006. ADDITIONAL WETLAND DELINEATION CONDUCTED BY S.W. COLE ON DECEMBER 15, 2006 IDENTIFIED AND DELINEATED THE LOCATION OF A FRESHWATER WETLAND AT THE NORTHEAST CORNER OF THE PROPERTY, JUST WEST OF A PORTLAND WATER DISTRICT EASEMENT, LABELED "WETLAND A, PF01/4", AND FURTHER DESCRIBED IN A LETTER REPORT DATED DECEMBER 21, 2006. WETLAND LOCATED BY MEANS OF GPS, DECEMBER 2006.
6. TREE ASSESSMENT CONDUCTED BY WOODLOT ALTERNATIVES, INC. APRIL 2007, AND SUMMARIZED WITHIN A LETTER REPORT DATED APRIL 13, 2007. LOCATIONS DETERMINED WITH HAND–HELD GPS UNIT, APRIL 2007.
7. VERNAL POOL ASSESSMENT CONDUCTED BY URS ON APRIL 16 AND MAY 19, 2006 AND SUMMARIZED IN LETTER REPORT DATED MAY 31, 2006.
8. EXISTING SEWER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE TOOL PLAZA LATERAL PLAN AND PROFILE 50+00 TO 63+70" DATED AUGUST, 2001
9. EXISTING WATER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE 42" WATERMAIN RELOCATION" DATED APRIL, 2001
10. UPDATED VERNAL POOL DELINEATION PERFORMED ON DECEMBER 12, 2010 FOR VERNAL POOLS E AND G BY BOYLE ASSOCIATES.
11. VERNAL POOL POINT INDICATORS (VP–XX–XX) LOCATED ON MAY 2, 2009 BY BOYLE ASSOCIATES.

Plan 6

LEGEND

- NON–IMPACTED WETLAND AREA TOTAL = 365,914 S.F. (8.40 ACRES)
- IMPACTED WETLAND AREA TOTAL = 37,416 S.F. (0.85 ACRES)
- TOTAL WETLAND AREA = 403,330 S.F. (9.25 ACRES)
- PHASE 1 BOUNDARY
- PHASE 2 BOUNDARY

Wetland Impacts	
Phase 1	
Completed Road	5243 SF
Proposed LCE 4	1461 SF
Proposed Road	215 SF
Future LCE 1	252 SF
Future LCE 2	7417 SF
Phase 1 Impact	14588 SF
Phase 2	
Future Road	5270 SF
Future LCE 3	3838 SF
Future LCE 5	6570 SF
Future LCE 6 & 7	7141 SF
Phase 2 Impact	22819 SF
Total Technology Park Impact	**37407 SF**

RAND ROAD
MAINE TURNPIKE EXIT 47
INTERSTATE ROUTE 95
SWAN STREET
PIERCE AVENUE
TRAIL (APPROX.)
OF ZONE (OFFICE PARK)
RP ZONE (RESOURCE PROTECTION)
BLOCK (RESOURCE PROTECTION)
PARKING AREA 1A 17 SPACES
PARKING AREA 1B 32 SPACES
PARKING AREA 1C 37 SPACES
PARKING AREA 1D 40 SPACES
PARKING AREA 2A 10 SPACES
PARKING AREA 2B 30 SPACES
PARKING AREA 3 31 SPACES
PARKING AREA 4A 22 SPACES
PARKING AREA 4B 10 SPACES
PARKING AREA 4C 38 SPACES
PARKING AREA 5A 40 SPACES
PARKING AREA 6 40 SPACES
PARKING AREA 7A 50 SPACES
PARKING AREA 7B 31 SPACES
TRAILHEAD PARKING 17 SPACES
TRAILHEAD PARKING
UNIT 1 42,000 S.F. 2 STORY F.F. EL. 66.00
UNIT 2 10,000 S.F. 1 STORY F.F. EL. 71.00
UNIT 3 10,000 S.F. 1 STORY F.F. EL. 68.50
UNIT 4 19,000 S.F. 2 STORY F.F. EL. 70.25
UNIT 5 10,000 S.F. 1 STORY F.F. EL. 70.00
UNIT 6 10,000 S.F. 1 STORY F.F. EL. 72.00
UNIT 7 20,000 S.F. 2 STORY F.F. EL. 71.00
LCE 1
LCE 2
LCE 3
LCE 4
LCE 5
LCE 6
LCE 7
VP–02–03/URS A
VP–02–04
VP–02–05/URS B
VP–02–06/URS C
VP–02–07/URS G
VP–02–08
VP–02–08/URS F
URS D
URS E
SMH 14 INV. IN 58.01 INV. OUT 57.91
SMH 13 INV. IN 56.68 INV. OUT 55.58
SMH 6 INV. IN 38.80 INV. OUT 38.70
SMH 12 INV. IN 40.80 INV. OUT 40.70
8" PVC SEWER
12" PVC SEWER
42" W WATER
POOL

BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

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WOODARD & CURRAN

STATE OF MAINE — DAVID A. SENUS — 10028 — REGISTERED PROFESSIONAL ENGINEER

10/2/2015

REV	DESCRIPTION	DATE

DESIGNED BY: MKC/JJS
DRAWN BY: JBC
CHECKED BY: DAS
2030863–WI–01.dwg

WETLAND IMPACT FIGURE

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: 1 OF 1

WI-01

\\woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\CIVIL\2030863–WI–01.dwg, Oct 02, 2015 – 11:26am

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
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9. EXISTING WATER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE 42" WATERMAIN RELOCATION" DATED APRIL, 2001
10. UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, SOIL MAP OF CUMBERLAND COUNTY AND PART OF OXFORD COUNTY, MAINE WEB SOIL SURVEY NATIONAL COOPERATIVE SOIL SURVEY

SOIL LEGEND

BuB	Buxton silt loam, 3 to 8 percent slopes
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes
Sn	Scantic silt loam
Sue2	Suffield loam, 25 to 45 percent slopes, eroded
Sz	Swanton fine sandy loam
WmD	Windsor loamy sand, 15 to 30 percent slopes

LEGEND:

- SUBCATCHMENT FLOWPATH (100')
- DRAINAGE AREA BOUNDARY
- SUBCATCHMENT NUMBER (2)
- 5 FT. CONTOUR (150)
- INTERMEDIATE CONTOUR
- WETLAND
- PROPERTY LINE
- SOILS BOUNDARY
- STUDY POINTS
- POTENTIAL VERNAL POOL LOCATION (APPROX.)

SUBCATCHMENT 1 AREA=2.886 ACRES CN=76
SUBCATCHMENT 2 AREA=7.558 ACRES CN=77
SUBCATCHMENT 3 AREA=0.800 ACRES CN=76
SUBCATCHMENT 4 AREA=2.645 ACRES CN=78
SUBCATCHMENT 5 AREA=12.060 ACRES CN=82
SUBCATCHMENT 6 AREA=11.090 ACRES CN=82
SUBCATCHMENT 7 AREA=4.915 ACRES CN=82
SUBCATCHMENT 0 AREA=0.852 ACRES CN=23

RAND ROAD
MAINE TURNPIKE EXIT 47
INTERSTATE ROUTE 95
SWAN STREET
PIERCE AVENUE

BAR SCALE 1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

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DAVID A. SPEARS 10751 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER 12/30/2011

REV	DESCRIPTION	DATE
DRAWN BY:	JOE	DAS
DESIGNED BY:	MKC	CHECKED BY:

203848\3-U12-1_12_2_12-3.dwg

PRE-DEVELOPMENT DRAINAGE AREA MAP

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE

PORTLAND TECHNOLOGY PARK

JOB NO.:	203848.63
DATE:	DECEMBER, 2011
SCALE:	1"=100'
SHEET:	OF

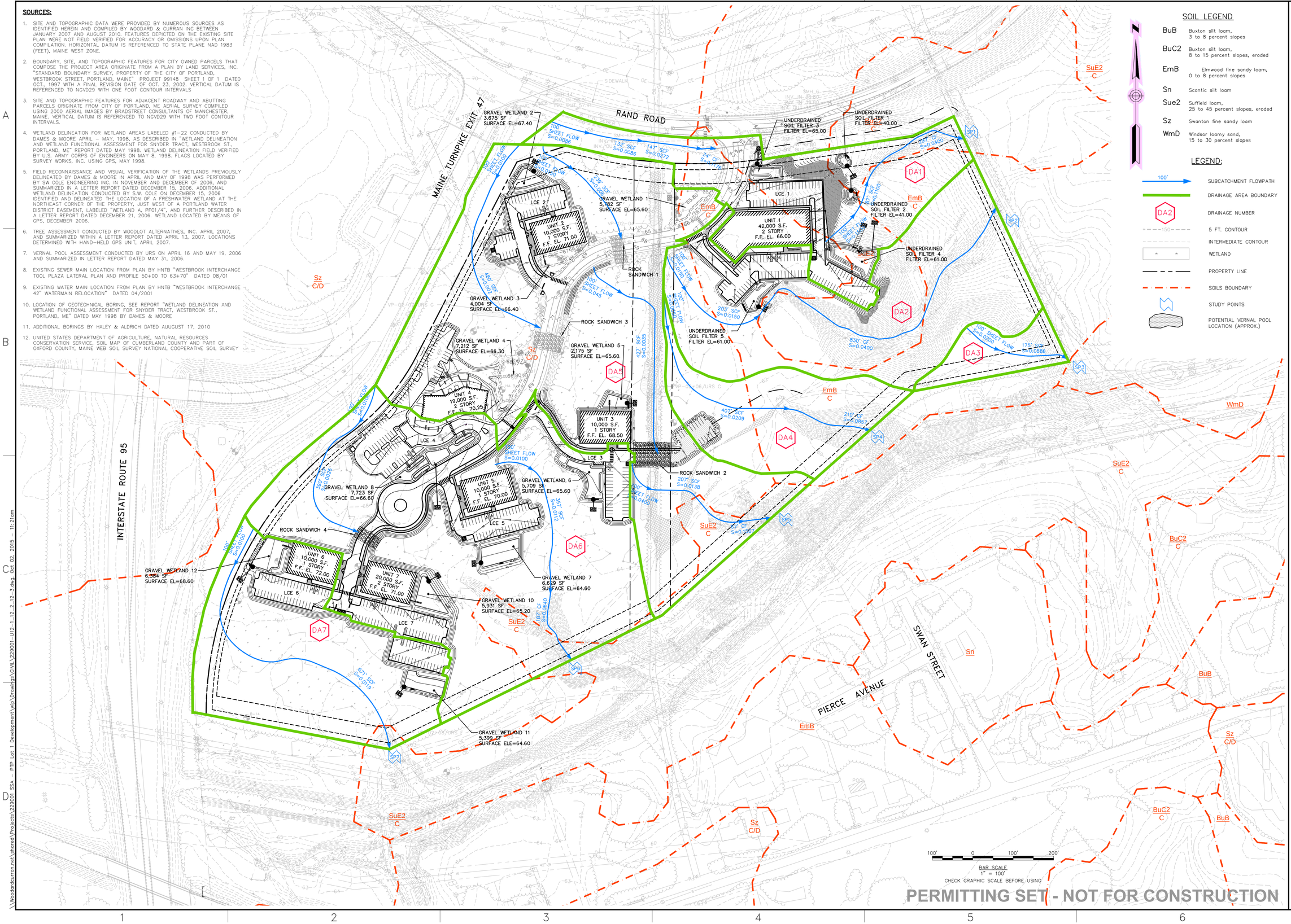
FIG 12-1

\\BANGOR\Projects\213452 Madawaska - Sewer System Improvements\wip\203848.63 City of Portland\Rand Road\CAD In Progress\203848\3-U12-1_12_2_12-3.dwg, Dec 30, 2011 - 8:50pm

24x36 SHEET
1:1

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
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11. ADDITIONAL BORINGS BY HALEY & ALDRICH DATED AUUGUST 17, 2010
12. UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, SOIL MAP OF CUMBERLAND COUNTY AND PART OF OXFORD COUNTY, MAINE WEB SOIL SURVEY NATIONAL COOPERATIVE SOIL SURVEY



SOIL LEGEND

BuB	Buxton silt loam, 3 to 8 percent slopes
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded
EmB	Elmwood fine sandy loam, 0 to 8 percent slopes
Sn	Scantic silt loam
Sue2	Suffield loam, 25 to 45 percent slopes, eroded
Sz	Swanton fine sandy loam
WmD	Windsor loamy sand, 15 to 30 percent slopes

LEGEND:

- SUBCATCHMENT FLOWPATH
- DRAINAGE AREA BOUNDARY
- DRAINAGE NUMBER
- 5 FT. CONTOUR
- INTERMEDIATE CONTOUR
- WETLAND
- PROPERTY LINE
- SOILS BOUNDARY
- STUDY POINTS
- POTENTIAL VERNAL POOL LOCATION (APPROX.)

BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
DAVID A. SENUS
029541
REGISTERED PROFESSIONAL ENGINEER

10/2/2015

REV	DESCRIPTION	CHECKED BY: DAS	22900-U12-1,2,2-3.dwg
		DESIGNED BY: MKC/AEA	
		DRAWN BY: JBC	

DATE

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: OF

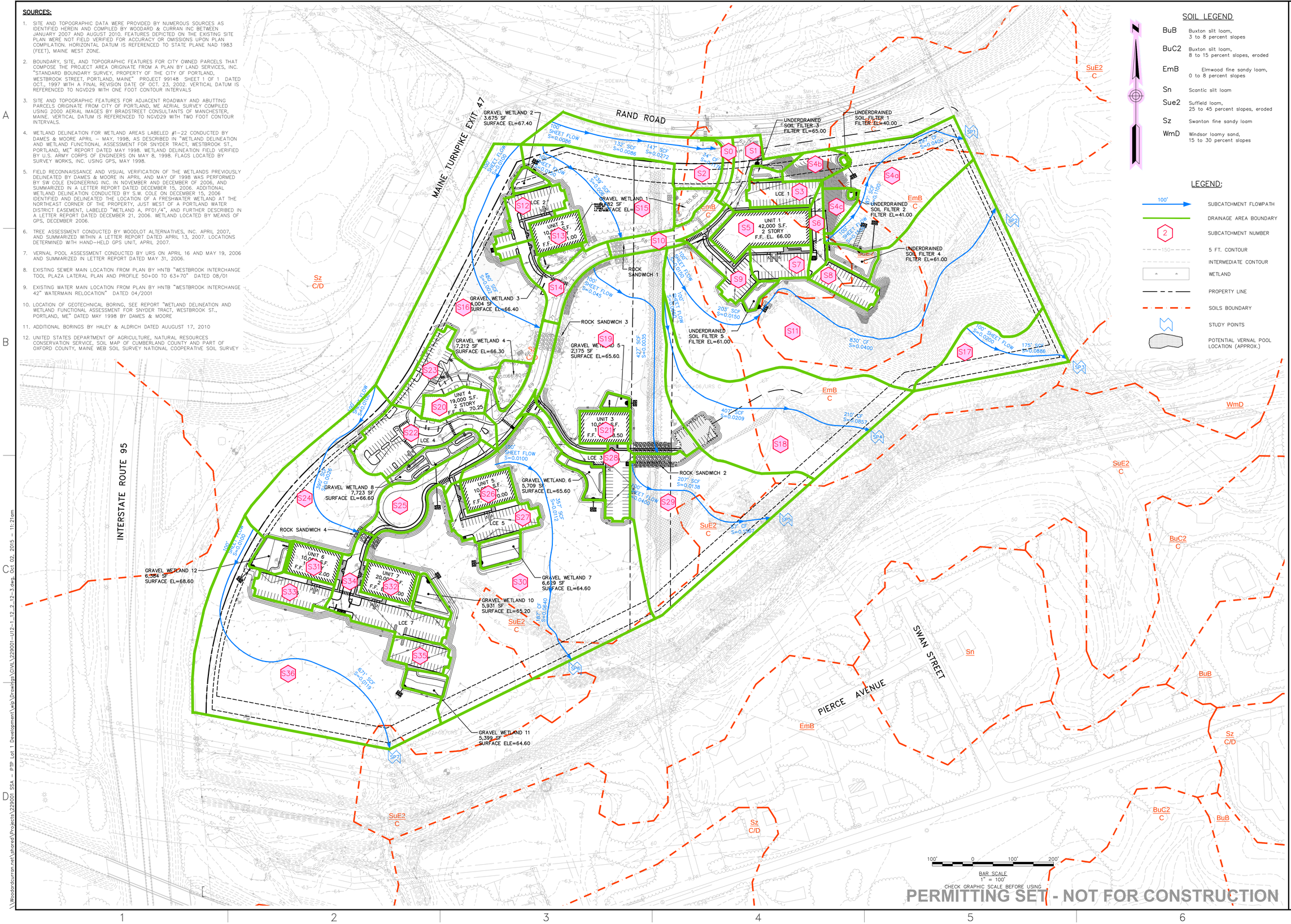
FIG 12-2

POST-DEVELOPMENT
DRAINAGE AREA MAP

\\Woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\Civil\229001-U12-1,12-2,12-3.dwg, Oct 02, 2015 - 11:21am

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
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SOIL LEGEND

BuB	Buxton silt loam, 3 to 8 percent slopes
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LEGEND:

- SUBCATCHMENT FLOWPATH
- DRAINAGE AREA BOUNDARY
- SUBCATCHMENT NUMBER
- 5 FT. CONTOUR
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DAVID A. SENUS — STATE OF MAINE — 10/2/2015

REV	DESCRIPTION	DATE

DESIGNED BY: MKC/AEA
DRAWN BY: JBC
CHECKED BY: DAS
22900-U12-1_12_2_12-3.dwg

POST-DEVELOPMENT
SUB-CATCHMENT AREA MAP

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

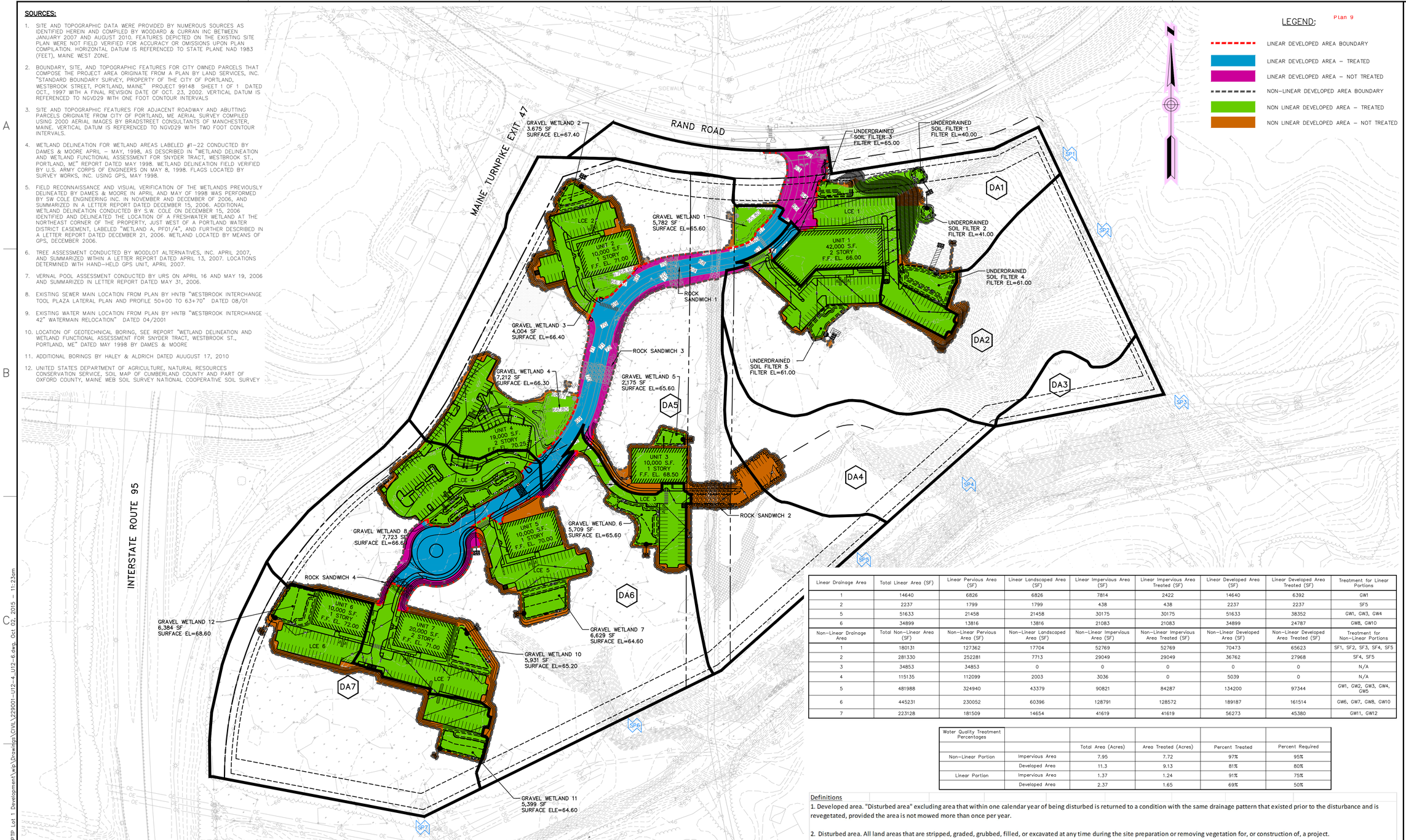
JOB NO.: 229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: OF

FIG 12-3

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Linear Drainage Area	Total Linear Area (SF)	Linear Pervious Area (SF)	Linear Landscaped Area (SF)	Linear Impervious Area (SF)	Linear Impervious Area Treated (SF)	Linear Developed Area (SF)	Linear Developed Area Treated (SF)	Treatment for Linear Portions
1	14640	6826	6826	7814	2422	14640	6392	GW1
2	2237	1799	1799	438	438	2237	2237	SF5
5	51633	21458	21458	30175	30175	51633	38352	GW1, GW3, GW4
6	34899	13816	13816	21083	21083	34899	24787	GW8, GW10
Non–Linear Drainage Area	**Total Non–Linear Area (SF)**	**Non–Linear Pervious Area (SF)**	**Non–Linear Landscaped Area (SF)**	**Non–Linear Impervious Area (SF)**	**Non–Linear Impervious Area Treated (SF)**	**Non–Linear Developed Area (SF)**	**Non–Linear Developed Area Treated (SF)**	**Treatment for Non–Linear Portions**
1	180131	127362	17704	52769	52769	70473	65623	SF1, SF2, SF3, SF4, SF5
2	281330	252281	7713	29049	29049	36762	27968	SF4, SF5
3	34853	34853	0	0	0	0	0	N/A
4	115135	112099	2003	3036	0	5039	0	N/A
5	481988	324940	43379	90821	84287	134200	97344	GW1, GW2, GW3, GW4, GW5
6	445231	230052	60396	128791	128572	189187	161514	GW6, GW7, GW8, GW10
7	223128	181509	14654	41619	41619	56273	45380	GW11, GW12

Water Quality Treatment Percentages					
		Total Area (Acres)	Area Treated (Acres)	Percent Treated	Percent Required
Non–Linear Portion	Impervious Area	7.95	7.72	97%	95%
	Developed Area	11.3	9.13	81%	80%
Linear Portion	Impervious Area	1.37	1.24	91%	75%
	Developed Area	2.37	1.65	69%	50%

Definitions

1. Developed area. "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.

2. Disturbed area. All land areas that are stripped, graded, grubbed, filled, or excavated at any time during the site preparation or removing vegetation for, or construction of, a project.

3. Impervious area. The total area of a parcel that consists of buildings and associated constructed facilities or areas that will be covered with a low–permeability material, such as asphalt or concrete, and areas such as gravel roads and unpaved parking areas that will be compacted through design or use to reduce their permeability.

4. Landscaped area. An area of land that has been disturbed and re–planted or covered with one or more of the following: lawn or other herbaceous plants, shrubs, trees, or mulch; but not including area that has reverted to a natural, vegetated condition. A field or meadow is considered landscaped if it is mowed more than twice per twelve month period.

5. Linear portion of a project. The portion of a project consisting of a utility corridor, road, driveway, railroad track outside a yard or station, or similar transportation corridor, as determined by the department.

100' 0 100' 200'
BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
DAVID A. SENUS
10791
REGISTERED PROFESSIONAL ENGINEER
10/2/2015

REV	DESCRIPTION	DATE

DESIGNED BY: MKG/AEA
DRAWN BY: JBC
CHECKED BY: DAS
22900-UI2-4_UI2-6.dwg

POST DEVELOPMENT
STORM WATER TREATMENT
OVERAL PLAN

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

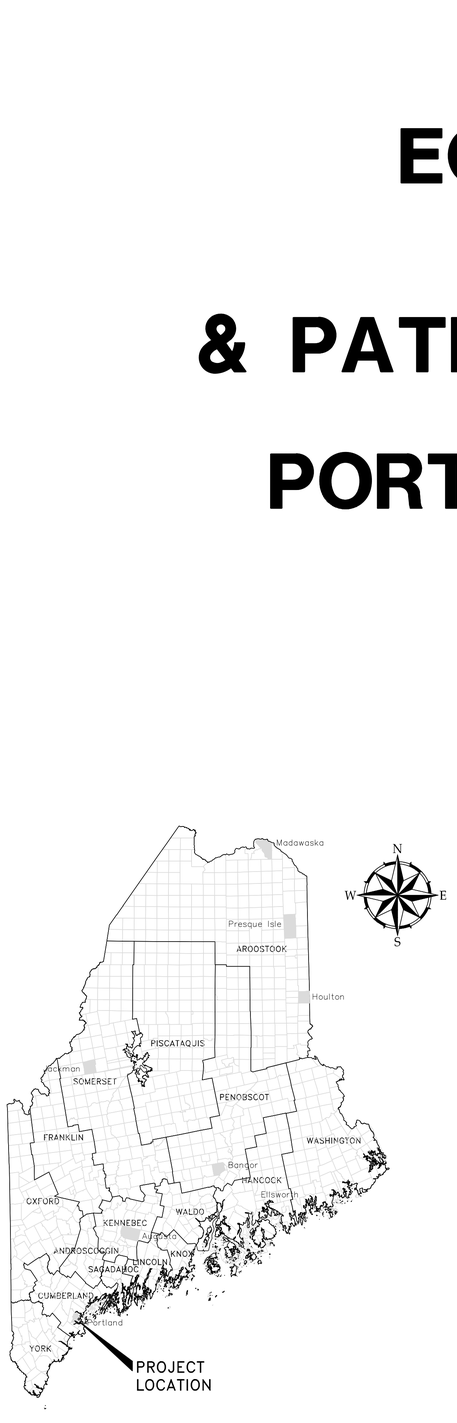
JOB NO.:229001
DATE: OCTOBER 2015
SCALE: 1" = 100'
SHEET: OF

FIG 12-4

\\woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\CIVIL\229001–UI2–4_UI2–6.dwg, Oct 02, 2015 – 11:23am

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE COMPANY

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT



PROJECT LOCATION MAP

50 0 50 100
scale mile

PROJECT NO. 229001.00

NOVEMBER 2015

PERMITTING PLANS

DAVID A. SENUS 10791
STATE OF MAINE PROFESSIONAL ENGINEER
11/20/2015

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SOURCE: USGS TOPOGRAPHIC MAP

SITE LOCATION MAP

1 0 1 1
scale mile

2000 0 2000 4000
scale feet

LEGEND**

DESCRIPTION	EXISTING	PROPOSED
CONTOUR (1' OR 2' INTERVAL)	122	122
CONTOUR (INDEX)	120	120
SANITARY SEWER	S	S
FORCE MAIN	FM	FM
STORM DRAIN	SD	SD
UNDERDRAIN	UD	UD
WATER MAIN OR SERVICE	W	W
UNDERGROUND ELECTRIC	E	E
UNDERGROUND COMMUNICATIONS	T	T
GAS LINE	G	G
OVERHEAD ELECTRIC	OE	OE
OIL PIPELINE	OIL	
BUILDING		
CULVERT	INV. IN. EL. XXX.XX / INV. OUT EL. XXX.XX	INV. IN. EL. XXX.XX / INV. OUT EL. XXX.XX
HOUSE SERVICE / LATERAL	S	S
PROPERTY LINE	℄	
RIGHT OF WAY	R/W	R/W
EASEMENT LINE		
LIMITED COMMON ELEMENT YARD LIMIT		
EASEMENT		
SETBACK		
ZONE LINE		
EDGE OF VEGETATION		
FENCE	x	x
GUARD RAIL		
CENTERLINE	℄	℄
RETAINING WALL		
STONEWALL		
CURB		
SIDEWALK		
EDGE OF PAVEMENT		
EDGE OF GRAVEL		
FUTURE TRAIL CONNECTION		
RAILROAD TRACKS		
DRAINAGE DITCH / SWALE		
SANITARY SEWER MANHOLE		
SANITARY SEWER SERVICE CLEANOUT	CO	CO
STORM DRAIN MANHOLE		
CATCH BASIN		
TELECOMM MANHOLE		
TELECOMM SERVICE BOX	T	
ELECTRIC MANHOLE		
TRANSFORMER		
UTILITY POLE W/GUY		
UTILITY POLE		
LIGHTPOST		
GAS METER BOX	G	G
GAS VENT		
GAS GATE		
WATER GATE		
CURB STOP		
HYDRANT		
WATER WELL	W	W
WATER METER BOX	W	W
SIGN		
FLAGPOLE	FP	
WETLAND HATCHING		
CONIFEROUS TREE		
TREE ASSESMENT LOCATION	EHWPCL1	
STONE CHECK DAM		SCD
SEDIMENT BARRIER		
IRON PIN	IPF	IPS
MONUMENTS	MF	MS
SPOT ELEVATION	XXX.XX	XXX.XX
TEST PIT & NUMBER	TP-X	
BORING & NUMBER	B-X	B-P
MONITORING WELL	MW-X	MW-P
DELINEATED WETLAND AREAS		
MANMADE WETLAND AREAS		
POTENTIAL VERNAL POOL LOCATION (APPROX.)		
ROCK SANDWICH/PERMEABLE ROCK BASE		

**THIS IS A GENERAL LEGEND. NOT ALL ITEMS APPEAR ON THESE DRAWINGS

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C-02 OVERALL TECHNOLOGY PARK SITE PLAN
C-03 LCE 4 SITE PLAN
C-04 LCE 4 SITE UTILITY PLAN
C-05 TECHNOLOGY PARK GRADING AND DRAINAGE PLAN 1
C-06 TECHNOLOGY PARK GRADING AND DRAINAGE PLAN 2
C-07 TECHNOLOGY PARK UTILITY PLAN 1
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L-3 SITE DETAILS – LANDSCAPE
ARCHITECTURAL
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A102 SECOND FLOOR PLAN
A103 CLERESTORY AND ROOF PLAN
A201 BUILDING ELEVATIONS
A202 BUILDING ELEVATIONS

ABBREVIATIONS

&	AND
A.G.	ABOVE GROUND
ALUM.	ALUMINUM
B	BORING
BIT.	BITUMINOUS
BK	BOOK
BM	BENCHMARK
CK.	CHECKED
CMP	CENTRAL MAINE POWER
CONC	CONCRETE
D.I.	DUCTILE IRON
DES.	DESIGNED
DIA.	DIAMETER
DR.	DRAWN
E	EAST
EL.	ELEVATION
ELEC.	ELECTRICAL
EMBED.	EMBEDDMENT
EX.	EXISTING
FF	FINISH FLOOR
FIN.	FINISH
FL.	FLOOR
FT	FOOT/FEET
GALV.	GALVANIZED
GRND	GROUND
H	HEIGHT
HWY	HIGHWAY
IN	INCH
INV.	INVERT
LCE	LIMITED COMMON ELEMENT (LOT)
LF	LINEAR FEET
MAX.	MAXIMUM
MDOT	MAINE DEPARTMENT OF TRANSPORTATION
MH	MANHOLE
MIN.	MINIMUM
MJ	MECHANICAL JOINT
MON	MONUMENT
MPH	MILES PER HOUR
NO.	NUMBER
NR	NO REFUSAL
N.T.S.	NOT TO SCALE
O.C.E.W.	ON CENTER EACH WAY
O.D.	OUTSIDE DIAMETER
OH	OVERHEAD
±	PLUS OR MINUS
PLS	PROFESSIONAL LAND SURVEYOR
PSI	PER SQUARE INCH
PSIG	PER SQUARE INCH GAUGE PRESSURE
PVC	POLYVINYL CHLORIDE
R.O.W.	RIGHT-OF-WAY
R/W	RIGHT-OF-WAY
RCP	REINFORCED CONCRETE PIPE
REINF.	REINFORCED
REQ'D	REQUIRED
RET	RETAINING
RLS	REGISTERED LAND SURVEYOR
RT	ROUTE
RTE	ROUTE
S	SLOPE
S.S.	STAINLESS STEEL
SCH	SCHEDULE
SDR	STANDARD DIMENSION RATIO
STA.	STATION
TYP.	TYPICAL
UC	UNDERGROUND CABLE
W	WATER
W	WEST
W/	WITH
WV	WATER VALVE

GENERAL NOTES

1. PROPERTY LINE, LIMITED COMMON ELEMENT YARD LIMIT, AND EASEMENT LINES ARE FROM A PLAN BY SGC ENGINEERING, LLC, TITLED CONDOMINIUM PLAT OF PORTLAND TECHNOLOGY PARK CONDOMINIUM, RAND ROAD, PORTLAND, MAINE, DATED 9-29-11 AND REVISED 3-17-14.
2. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH ONE FOOT AND TWO FOOT CONTOUR INTERVALS. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
3. THE UTILITY LOCATIONS SHOWN IN PLAN AND PROFILE ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION BY THE CONTRACTOR. CONTACT THE CITY IMMEDIATELY UPON DISCOVERING CONFLICTS WITH EXISTING AND PROPOSED UTILITY LOCATIONS. NOT ALL EXISTING UTILITIES ARE SHOWN ON PLANS.
4. CLEAN AND/OR FLUSH ALL MANHOLES, CATCH BASINS, AND ASSOCIATED PIPING AFTER THE WORK HAS BEEN COMPLETED.
5. COORDINATE CONSTRUCTION ACTIVITY WITH UTILITY COMPANIES, EMERGENCY SERVICES AND THE CITY OF PORTLAND. CONTACTS ARE LISTED ON SHEET G-001. NOTIFY UTILITY COMPANIES WITHIN 48 HOURS OF WORK ACTIVITY ADJACENT TO THOSE UTILITIES.
6. CONTRACTOR SHALL NOTIFY ALL UTILITIES PRIOR TO COMMENCING WORK, ALLOWING SUFFICIENT TIME TO LOCATE AND MARK THE LOCATION OF BURIED UTILITIES. CONTRACTOR SHALL CONTACT "DIG SAFE", TELEPHONE 1-888-DIG SAFE (1-888-344-7233), PRIOR TO EXCAVATION.
7. RESTORE ALL AREAS DISTURBED BY CONTRACTOR'S OPERATIONS TO ORIGINAL FINISH (GRAVEL, PAVEMENT, GRASS, ETC.). RESTORATION OF PAVED SURFACES, GRAVEL SURFACES, DRIVEWAYS, AND LAWNS DAMAGED BY CONSTRUCTION ACTIVITIES OUTSIDE OF LIMITS OF WORK INDICATED ON THE PLANS SHALL BE PERFORMED AT NO ADDITIONAL COST TO OWNER. ALL CURB NOT DESIGNATED TO BE RESET AND DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED IN KIND AND SHALL CONFORM TO CITY OF PORTLAND AND MAINE DOT SPECIFICATIONS AT NO ADDITIONAL COST TO OWNER.
8. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS AND MONUMENTS NOT INDICATED ON THE DRAWINGS FOR REMOVAL. IF DISTURBED, THE PROPERTY MONUMENT SHALL BE RESET AT THE CONTRACTOR'S EXPENSE, BY A PROFESSIONAL LAND SURVEYOR APPROVED BY THE CITY.
9. EXISTING FACILITIES (I.E. TREES, POLES, LIGHT POSTS, CATCH BASINS, ETC.) SHALL BE REMOVED AND PROTECTED DURING CONSTRUCTION. THE CITY OF PORTLAND RETAINS RIGHT TO KEEP ANY AND ALL REMOVED FACILITIES. CONTRACTOR TO DISPOSE OF ANY REMOVED FACILITY AT THE REQUEST OF CITY AT CONTRACTOR'S EXPENSE.
10. ALL TREES AND VEGETATION WITHIN THE SITE NOT NOTED TO BE REMOVED OR RELOCATED PER THE CLEARING LIMITS OR NOTES SHALL BE PROTECTED DURING CONSTRUCTION.
11. DO NOT PARK, IMPEDE ACCESS TO, OR STORE EQUIPMENT ON ADJACENT CITY OR PRIVATELY OWNED LOTS UNLESS PERMISSION HAS BEEN GRANTED IN WRITING BY CITY AND/OR LAND OWNER.
12. COORDINATE DISRUPTION OF PRIVATE UTILITY SERVICES WITH LANDOWNERS AT LEAST TWO DAYS (48 HOURS) PRIOR TO DISRUPTION. ALL UTILITY COORDINATION IS RESPONSIBILITY OF CONTRACTOR.
13. RESTRICT ACCESS TO SITE THROUGH USE OF APPROPRIATE SIGNAGE, BARRIERS, FENCES, ETC. SITE SHALL BE LEFT WITH APPROPRIATE SAFETY MEASURE IN PLACE DURING NON-WORKING HOURS. NO TRENCH SHALL BE LEFT OPEN DURING NON-WORKING HOURS. SITE SAFETY IS THE RESPONSIBILITY OF CONTRACTOR DURING BOTH WORKING AND NON-WORKING HOURS.
14. ALL WORK ASSOCIATED WITH THE PROJECT SHALL BE COMPLETED IN ACCORDANCE WITH THE CITY OF PORTLAND CODE OF ORDINANCES AND TECHNICAL DESIGN STANDARDS AND GUIDELINES.
15. ALL WORK ASSOCIATED WITH THE PROJECT SHALL BE COMPLETED IN ACCORDANCE WITH ARTICLES VI, VII, AND IX OF CHAPTER 25-STREETS, SIDEWALKS AND OTHER PUBLIC PLACES OF THE CITY OF PORTLAND CODE OF ORDINANCES.
16. ALL SEWER CONSTRUCTION IN THE PUBLIC WAY SHALL BE COMPLETED IN ACCORDANCE WITH ARTICLES II OF CHAPTER 24-SEWERS OF THE CITY OF PORTLAND CODE OF ORDINANCES.
17. THE CITY OF PORTLAND ENGINEERING DIVISION REQUIRES THAT UPON COMPLETION OF CONSTRUCTION, A COMPLETE SET OF "AS-BUILT" DRAWINGS THAT REFLECT ANY AND ALL MODIFICATIONS TO THE SANITARY SEWER SYSTEM, STORM SEWER SYSTEM, AND ANY OTHER UTILITY INSTALLATIONS OR ALTERATIONS WITHIN THE PROJECT LIMITS BE SUBMITTED TO THE DIVISION. THESE DRAWINGS SHALL BE SUBMITTED IN BOTH DIGITAL AND HARD COPY FORMAT AS DEFINED IN THE SPECIFICATIONS PRIOR TO PAYMENT OF FINAL RETAINAGE.
18. GAS MAINS AND SERVICES SHALL BE FURNISHED AND INSTALLED BY UNITIL. CONTRACTOR SHALL EXCAVATE, BED, BACKFILL, AND RESTORE SURFACE IN ACCORDANCE WITH DETAILS. UNITIL SHALL PROVIDE PIPING, VALVES, AND FITTINGS. CONTRACTOR SHALL COORDINATE ALL WORK WITH UNITIL.
19. CONTACT CITY OF PORTLAND ARBORIST AND ENGINEER PRIOR TO CUTTING ROOTS, TRIMMING BRANCHES, OR DISTURBING TREES THAT HAVE NOT BEEN NOTED FOR REMOVAL ON PLANS.
20. PROVIDE 4" LOAM AND SEED IN ALL EXISTING AND PROPOSED LAWN AREAS DISTURBED BY CONTRACTOR'S OPERATIONS.
21. IF CONTRACTOR PROPOSES TO TEMPORARILY STOCKPILE AND SURPLUS SOIL AND ROCK IN THE CITY OF PORTLAND, THE CONTRACTOR SHALL OBTAIN APPROVAL FOR EACH STOCKPILE LOCATION FROM THE ENGINEER. IF CONTRACTOR PROPOSES TO PERMANENTLY STOCKPILE ANY SURPLUS SOIL AND ROCK ON PROPERTY IN THE CITY OF PORTLAND, THE CONTRACTOR MUST OBTAIN ANY SITE PLAN PERMITS REQUIRED FROM THE CITY PLANNING AUTHORITY OR ANY FILL PERMITS REQUIRED FROM MDEP OR U.S. ARMY CORPS OF ENGINEERS. BOTH TEMPORARY AND PERMANENT STOCKPILE LOCATIONS SHALL MEET THE APPLICABLE SETBACK REQUIREMENTS IN THE CITY LAND USE CODE. UNDER NO CIRCUMSTANCES SHALL TOP SOIL BE REMOVED FROM THE BOUNDARIES OF THE PORTLAND TECHNICAL PARK. IF A SURPLUS OF TOP SOIL EXIST, THE CONTRACTOR SHALL COORDINATE WITH THE CITY REPRESENTATIVE TO FIND A LOCATION TO STOCKPILE, SEED AND MULCH. 1
22. PIPE STUB LOCATIONS SHALL BE MARKED WITH EMBEDDED STAKE AS DESCRIBED ON PLANS AND A MINIMUM OF THREE TIES SHOULD BE RECORDED. LOCATION AND ELEVATION OF PIPE STUB SHALL BE PROVIDED TO THE CITY OF PORTLAND ENGINEERING OFFICE.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS INCLUDING. PERMIT APPLICATIONS SHALL BE SUBMITTED WITH ADEQUATE TIME SO AS NOT TO DELAY CONSTRUCTION. THE CONTRACTOR WILL ALSO BE REQUIRED TO HAVE A CURRENT EXCAVATOR'S LICENSE IN THE CITY.
24. ALL CONSTRUCTION REQUIREMENTS AND MATERIAL SPECIFICATIONS SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND DETAILS OF THE CITY OF PORTLAND, MDEP, AND MDOT, WHERE APPLICABLE.
25. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING TRENCH AT UTILITY CROSSINGS AT ROCK SANDWICH LOCATIONS TO MATCH DESIGN REQUIREMENTS FOR EACH SECTION OF AGGREGATE. UTILITY COMPANIES WILL NOT BE ALLOWED TO REPLACE THE TRENCH SECTION WITH SAND OR GRAVEL AT LOCATIONS REQUIRING CRUSHED STONE, UNLESS IT IS UTILIZED FOR THE IMMEDIATE BEDDING OF THE PIPE.

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DAVID A. SENUS 12051 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER
11/20/2015

REV	DESCRIPTION	DATE
1	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15

DESIGNED BY: AEA/LJS | CHECKED BY: DAS
DRAWN BY: JBC | 229001-001.dwg

LEGEND, SHEET INDEX, ABBREVIATIONS, AND GENERAL NOTES

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.: 229001.01
DATE: NOVEMBER 2015
SCALE: NONE
SHEET: 1 OF 18

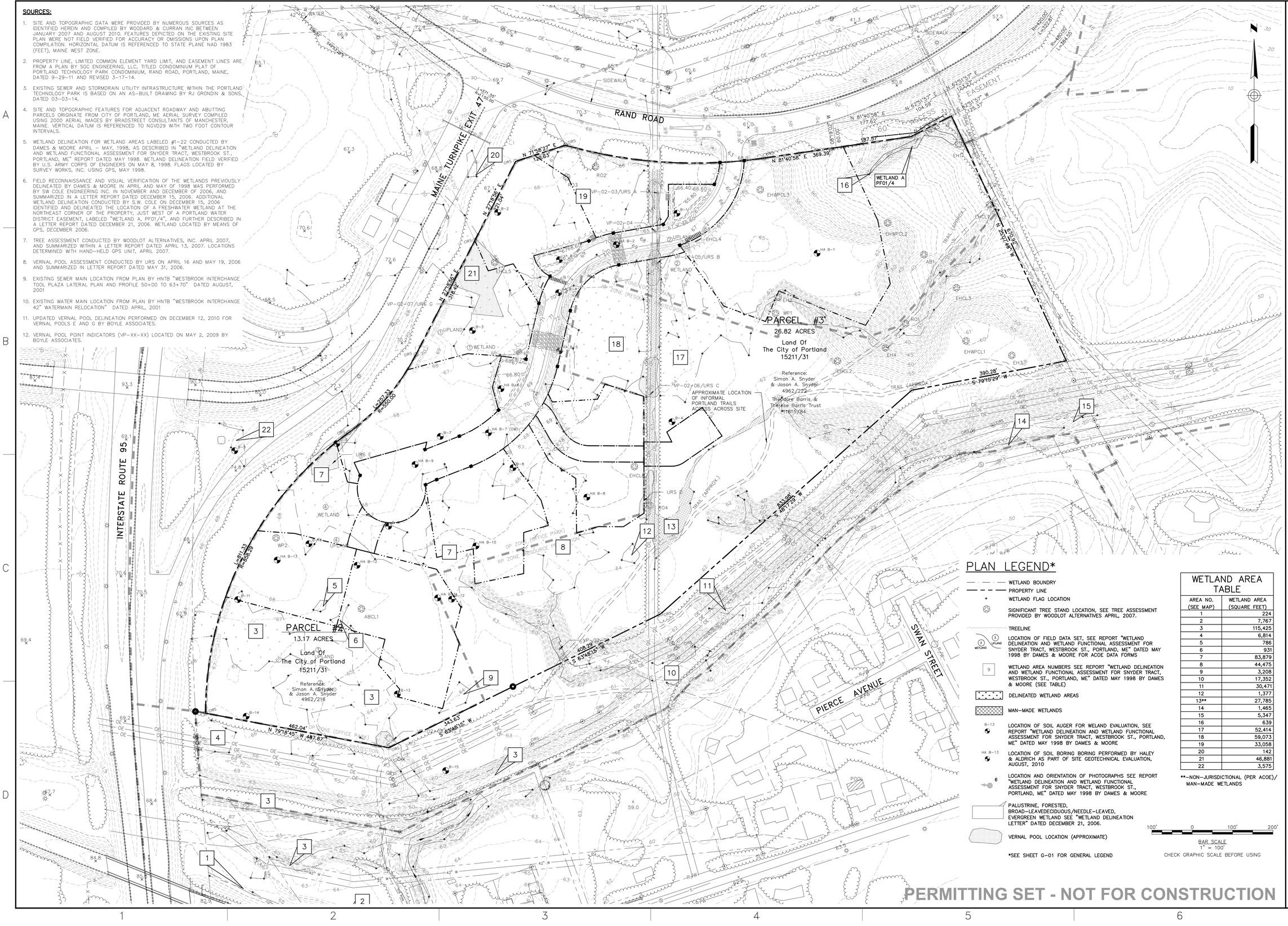
G-01

\\Woodardcurran.net\shared\Projects\229001 SSA - PTP Lot 11 Development\wip\Drawings\GENERAL\229001-G01.dwg, Nov 23, 2015 - 8:37am

24x36 SHEET
1:1

SOURCES:

1. SITE AND TOPOGRAPHIC DATA WERE PROVIDED BY NUMEROUS SOURCES AS IDENTIFIED HEREIN AND COMPILED BY WOODARD & CURRAN INC BETWEEN JANUARY 2007 AND AUGUST 2010. FEATURES DEPICTED ON THE EXISTING SITE PLAN WERE NOT FIELD VERIFIED FOR ACCURACY OR OMISSIONS UPON PLAN COMPILATION. HORIZONTAL DATUM IS REFERENCED TO STATE PLANE NAD 1983 (FEET), MAINE WEST ZONE.
2. PROPERTY LINE, LIMITED COMMON ELEMENT YARD LIMIT, AND EASEMENT LINES ARE FROM A PLAN BY SGC ENGINEERING, LLC, TITLED CONDOMINIUM PLAT OF PORTLAND TECHNOLOGY PARK CONDOMINIUM, RAND ROAD, PORTLAND, MAINE, DATED 9-29-11 AND REVISED 3-17-14.
3. EXISTING SEWER AND STORMDRAIN UTILITY INFRASTRUCTURE WITHIN THE PORTLAND TECHNOLOGY PARK IS BASED ON AN AS-BUILT DRAWING BY RJ GRONDIN & SONS, DATED 03-03-14,
4. SITE AND TOPOGRAPHIC FEATURES FOR ADJACENT ROADWAY AND ABUTTING PARCELS ORIGINATE FROM CITY OF PORTLAND, ME AERIAL SURVEY COMPILED USING 2000 AERIAL IMAGES BY BRADSTREET CONSULTANTS OF MANCHESTER, MAINE. VERTICAL DATUM IS REFERENCED TO NGVD29 WITH TWO FOOT CONTOUR INTERVALS.
5. WETLAND DELINEATION FOR WETLAND AREAS LABELED #1-22 CONDUCTED BY DAMES & MOORE APRIL – MAY, 1998, AS DESCRIBED IN "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" REPORT DATED MAY 1998. WETLAND DELINEATION FIELD VERIFIED BY U.S. ARMY CORPS OF ENGINEERS ON MAY 8, 1998. FLAGS LOCATED BY SURVEY WORKS, INC. USING GPS, MAY 1998.
6. FIELD RECONNAISSANCE AND VISUAL VERIFICATION OF THE WETLANDS PREVIOUSLY DELINEATED BY DAMES & MOORE IN APRIL AND MAY OF 1998 WAS PERFORMED BY SW COLE ENGINEERING INC. IN NOVEMBER AND DECEMBER OF 2006, AND SUMMARIZED IN A LETTER REPORT DATED DECEMBER 15, 2006. ADDITIONAL WETLAND DELINEATION CONDUCTED BY S.W. COLE ON DECEMBER 15, 2006 IDENTIFIED AND DELINEATED THE LOCATION OF A FRESHWATER WETLAND AT THE NORTHEAST CORNER OF THE PROPERTY, JUST WEST OF A PORTLAND WATER DISTRICT EASEMENT, LABELED "WETLAND A, PF01/4", AND FURTHER DESCRIBED IN A LETTER REPORT DATED DECEMBER 21, 2006. WETLAND LOCATED BY MEANS OF GPS, DECEMBER 2006.
7. TREE ASSESSMENT CONDUCTED BY WOODLOT ALTERNATIVES, INC. APRIL 2007, AND SUMMARIZED WITHIN A LETTER REPORT DATED APRIL 13, 2007. LOCATIONS DETERMINED WITH HAND-HELD GPS UNIT, APRIL 2007.
8. VERNAL POOL ASSESSMENT CONDUCTED BY URS ON APRIL 16 AND MAY 19, 2006 AND SUMMARIZED IN LETTER REPORT DATED MAY 31, 2006.
9. EXISTING SEWER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE TOLL PLAZA LATERAL PLAN AND PROFILE 50+00 TO 63+70" DATED AUGUST, 2001
10. EXISTING WATER MAIN LOCATION FROM PLAN BY HNTB "WESTBROOK INTERCHANGE 42" WATERMAIN RELOCATION" DATED APRIL, 2001
11. UPDATED VERNAL POOL DELINEATION PERFORMED ON DECEMBER 12, 2010 FOR VERNAL POOLS E AND G BY BOYLE ASSOCIATES.
12. VERNAL POOL POINT INDICATORS (VP-XX-XX) LOCATED ON MAY 2, 2009 BY BOYLE ASSOCIATES.



PLAN LEGEND*

- WETLAND BOUNDRY
- PROPERTY LINE
- WETLAND FLAG LOCATION
- SIGNIFICANT TREE STAND LOCATION, SEE TREE ASSESSMENT PROVIDED BY WOODLOT ALTERNATIVES APRIL, 2007.
- TREELINE
- LOCATION OF FIELD DATA SET, SEE REPORT "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" DATED MAY 1998 BY DAMES & MOORE FOR ACOE DATA FORMS
- WETLAND AREA NUMBERS SEE REPORT "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" DATED MAY 1998 BY DAMES & MOORE (SEE TABLE)
- DELINEATED WETLAND AREAS
- MAN-MADE WETLANDS
- LOCATION OF SOIL AUGER FOR WELAND EVALUATION, SEE REPORT "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" DATED MAY 1998 BY DAMES & MOORE
- LOCATION OF SOIL BORING BORING PERFORMED BY HALEY & ALDRICH AS PART OF SITE GEOTECHNICAL EVALUATION, AUGUST, 2010
- LOCATION AND ORIENTATION OF PHOTOGRAPHS SEE REPORT "WETLAND DELINEATION AND WETLAND FUNCTIONAL ASSESSMENT FOR SNYDER TRACT, WESTBROOK ST., PORTLAND, ME" DATED MAY 1998 BY DAMES & MOORE
- PALUSTRINE, FORESTED, BROAD-LEAVEDECIDUOUS/NEEDLE-LEAVED, EVERGREEN WETLAND SEE "WETLAND DELINEATION LETTER" DATED DECEMBER 21, 2006.
- VERNAL POOL LOCATION (APPROXIMATE)

*SEE SHEET G-01 FOR GENERAL LEGEND

WETLAND AREA TABLE	
AREA NO. (SEE MAP)	WETLAND AREA (SQUARE FEET)
1	224
2	7,767
3	115,425
4	6,814
5	786
6	931
7	83,879
8	44,475
9	3,208
10	17,352
11	30,471
12	1,377
13**	27,785
14	1,465
15	5,347
16	639
17	52,414
18	59,073
19	33,058
20	142
21	46,881
22	3,575

**-NON-JURISDICTIONAL (PER ACOE)/ MAN-MADE WETLANDS

100' 0 100' 200'
BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
DAVID A. SENUS
10791
REGISTERED PROFESSIONAL ENGINEER
11/20/2015

REV	DESCRIPTION	DATE

DESIGNED BY: AEA/AJS
DRAWN BY: JSC
CHECKED BY: DAS
229001-C-01.dwg

EXISTING CONDITIONS PLAN

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LOT 4 DEVELOPMENT

JOB NO.:229001.01
DATE:NOVEMBER 2015
SCALE:1" = 100'
SHEET: 2 OF 18

C-01

24x36 SHEET
1:1

TOTAL BUILDING AREA = 121,000 S.F.

OFFICE PARK (OP) ZONE REQUIREMENTS

–	REQUIRED	PROVIDED
FRONT YARD SETBACK	50 FT.	123 FT.
SIDE YARD SETBACK	25 FT.	87 FT.
REAR YARD SETBACK	50 FT.	299 FT.
PAVEMENT SETBACK	15 FT.	15 FT.
IMPERVIOUS SURFACE RATIO	60% MAX.	27%
LOT SIZE	1.5 ACRES MIN.	26 ACRES
STREET FRONTAGE	100 FT. MIN.	>1,000 FT.
LOT WIDTH	150 FT. MIN.	270 FT.
PARKING SPACES	2.5/1,000 S.F. OR 300	445*

*INCLUDES TRAILHEAD PARKING

RAND ROAD
MAINE TURNPIKE EXIT 47
INTERSTATE ROUTE 95
50' FRONT YARD
15' PAVING SETBACK
POTENTIAL FUTURE TRAIL CONNECTION
PARKING AREA 2B 30 SPACES
SNOW STORAGE (TYP.)
LCE 2
UNIT 2 10,000 S.F. 1 STORY F.F. EL. 71.00
PARKING AREA 2A 10 SPACES
LCE 1
UNIT 1 42,000 S.F. 2 STORY F.F. EL. 66.00
PARKING AREA 1D 40 SPACES
PARKING AREA 1C 37 SPACES
PARKING AREA 1B 32 SPACES
PARKING AREA 1A 17 SPACES
25' SIDE YARD
100' PROPOSED PORTLAND PIPELINE EASEMENT
PARCEL #3
26.82 ACRES
Land Of The City of Portland
15211/31
PARKING AREA 4A 23 SPACES
PARKING AREA 4B 10 SPACES
PARKING AREA 4C 37 SPACES
UNIT 4 19,000 S.F. 2 STORY F.F. EL. 70.25
LCE 4
UNIT 3 10,000 S.F. 1 STORY F.F. EL. 68.50
LCE 3
TRAILHEAD PARKING 17 SPACES
50' REAR YARD
UNIT 5 10,000 S.F. 1 STORY F.F. EL. 70.00
LCE 5
PARKING AREA 3 31 SPACES
PARKING AREA 5A 40 SPACES
UNIT 6 10,000 S.F. 1 STORY F.F. EL. 72.00
UNIT 7 20,000 S.F. 2 STORY F.F. EL. 71.00
LCE 6
LCE 7
PARKING AREA 6 40 SPACES
PARCEL #2
13.17 ACRES
Land Of The City of Portland
15211/31
PARKING AREA 7A 50 SPACES
PARKING AREA 7B 31 SPACES
UNITIL 20' WIDE GAS LINE EASEMENT
SWAN STREET
PIERCE AVENUE
Reference: Simon A. Snyder & Jason A. Snyder 4962/222
Theodore Barris & Therese Barris Trust 11815/84
Reference: Simon A. Snyder & Jason A. Snyder 4962/216

100' 0 100' 200'
BAR SCALE 1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

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DAVID A. SENUS 10791 REGISTERED PROFESSIONAL ENGINEER STATE OF MAINE
11/20/2015

REV	DESCRIPTION	DATE
1	SUBDIVISION BOUNDARY MODIFICATIONS	1/03/2015

DESIGNED BY: AEA/AJS
DRAWN BY: JBC
CHECKED BY: DAS
22900I-C-01_02.dwg

OVERALL TECHNOLOGY PARK SITE PLAN

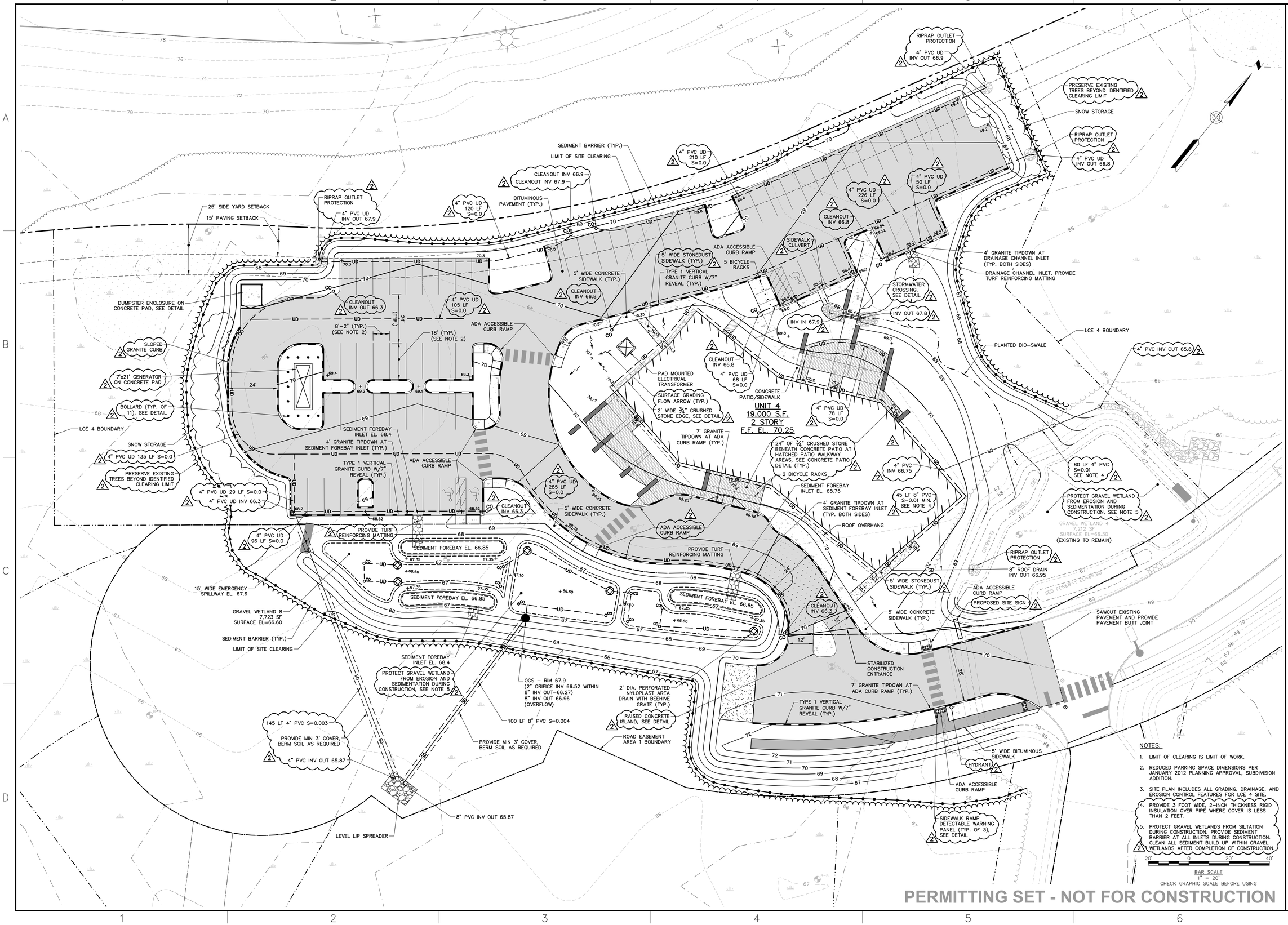
CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE & LCE 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: 1" = 100'
SHEET: 3 OF 18

C-02

24x36 SHEET
1:1



NOTES:

1. LIMIT OF CLEARING IS LIMIT OF WORK.
2. REDUCED PARKING SPACE DIMENSIONS PER JANUARY 2012 PLANNING APPROVAL, SUBDIVISION ADDITION.
3. SITE PLAN INCLUDES ALL GRADING, DRAINAGE, AND EROSION CONTROL FEATURES FOR LCE 4 SITE.
4. PROVIDE 3 FOOT WIDE, 2-INCH THICKNESS RIGID INSULATION OVER PIPE WHERE COVER IS LESS THAN 2 FEET.
5. PROTECT GRAVEL WETLANDS FROM SILTATION DURING CONSTRUCTION. PROVIDE SEDIMENT BARRIER AT ALL INLETS DURING CONSTRUCTION. CLEAN ALL SEDIMENT BUILD UP WITHIN GRAVEL WETLANDS AFTER COMPLETION OF CONSTRUCTION.

20' 0 20' 40'

BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

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STATE OF MAINE
DAVID A. SENUS
07/31
REGISTERED PROFESSIONAL ENGINEER

11/20/2015

REV	DESCRIPTION	DATE
1	SUBDIVISION BOUNDARY MODIFICATIONS	11/03/2015
2	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15

DESIGNED BY: AEA/LJS | CHECKED BY: DAS
DRAWN BY: JBC | 22900-C-03_04.dwg

LCE 4 SITE PLAN

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: 1" = 20'
SHEET: 4 OF 18

C-03

24x36 SHEET
1:1

LIGHT POLE BASE & FIXTURE (TYP.)

7'x21' GENERATOR ON CONCRETE PAD

BOLLARD (TYP. OF 11), SEE DETAIL

4" PVC UD INV 66.3

FUTURE SEWER INSTALLED BY OTHERS

SMH #11
RIM: 69.35

SMH #19
RIM: 69.66

OCS – RIM 67.9
(2" ORIFICE INV 66.52 WITHIN 8" INV OUT=66.27)
8" INV OUT 66.96
(OVERFLOW)

145 LF 4" PVC S=0.003

SMH #10
RIM: 69.15

FUTURE SEWER INSTALLED BY OTHERS

100 LF 8" PVC S=0.004

4" PVC INV OUT 65.87

LEVEL LIP SPREADER

8" PVC INV OUT 65.87

PAD MOUNTED ELECTRICAL TRANSFORMER

UNIT 4
19,000 S.F.
2 STORY
F.F. EL. 70.25

UNDERGROUND COMMUNICATION

UNDERGROUND ELECTRIC

8" DI WATER (FIRE)

DI MJ 45° BEND WITH THRUST BLOCK

2" WATER SERVICE

4" PVC INV 66.75

SMH #17
STA. 10+58 58 FT R
INV. IN 64.66 (8")
INV. OUT 64.56 (8")

7 LF OF 4" PVC PIPE SAN. INV.=64.69 S=0.0050

80 LF 4" PVC S=0.01 SEE NOTE 4

4" PVC INV OUT 65.8

8" PVC ROOF DRAIN INV OUT 66.95

CONNECT EXISTING 8" SEWER STUB TO NEW SMH

INV 61.54 STUB

CONNECT TO EXISTING GAS MAIN

55 LF OF 8" PVC PIPE

GAS VALVE AND STUB FOR FUTURE CONNECTION

SMH #8
STA. 9+86 2 FT R
INV. IN 61.64 (8")
INV. OUT 61.54 (8")

71 LF OF 8" PVC PIPE

61 LF OF 8" PVC PIPE

2' DIA. PERFORATED NYLOPLAST AREA DRAIN WITH BEEHIVE GRATE (TYP.)

CONNECT GAS MAIN TO SUPPLY MAIN FROM WESTBROOK STREET; LOCATION T.B.D. (INSTALLED BY OTHERS)

8" SEWER STUB INV 62.68

12" DI WATERMAIN CAP

12" GATE VALVE

CAP ELECTRIC AND COMMUNICATIONS CONDUITS

12" DI WATER

1 1/2" CDT (TYP.)

1" AIR VALVE AT HIGH POINT

SMH #9
STA. 10+61 1 FT L
INV. IN 62.38 (8")
INV. IN 62.38 (8")
INV. OUT 62.28 (8")

HYD, TEE, AND VALVE ASSEMBLY

CONNECT 12" DI WATER TO EXISTING 12" DI WATERMAIN

LIGHT POLE BASE & FIXTURE (TYP.)

8" GATE VALVE

PROVIDE 12x12x8 MJ TEE

2" GATE VALVE

SMH #7
RIM: 69.64
INV. IN 60.49 (8")
INV. IN 60.59 (8" STUB)
INV. OUT 60.39 (8")

INV IN 60.79 STUB

CONNECT TO EXISTING ELECTRICAL AND COMMUNICATIONS DUCTS

CONNECT TO EXISTING LIGHTING CONDUITS

NOTE:

LIMIT OF CLEARING IS LIMIT OF WORK.

20' 0 20' 40'

BAR SCALE
1" = 20'
CHECK GRAPHIC SCALE BEFORE USING

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STATE OF MAINE
DAVID A. SENUS
10781
REGISTERED PROFESSIONAL ENGINEER

11/20/2015

REV.	DESCRIPTION	DATE
1	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15

DESIGNED BY: LJS | CHECKED BY: DAS
DRAWN BY: JBC | 229001-C-03_04.dwg

LCE 4 SITE UTILITY PLAN

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.: 229001.01
DATE: NOVEMBER 2015
SCALE: 1" = 20'
SHEET: 5 OF 18

C-04

24x36 SHEET
1:1

RAND ROAD

MAINE TURNPIKE EXIT 47

NOTE:
SEE SHEET G-01 FOR LEGEND

GRAVEL WETLAND 2
3,675 SF
SURFACE EL=67.40

INV OUT=67.00

17 LF 4" PVC
@ S=0.097

OCS
0.75" ORIFICE=67.07
4" INV OUT=68.65

10' WIDE EMERGENCY
SPILLWAY EL=69.15

2' DIA. PERFORATED NYLOPLAST AREA DRAIN WITH BEEHIVE GRATE (TYP.)

PROTECT EXISTING TREE. SEE DETAIL SHEET C-10.

SED. FOREBAY EL=68.00
INV IN 67.60
INV IN 67.60

5' CURB CUT (TYP.)

UNIT 2
10,000 S.F.
1 STORY
F.F. EL. 71.00

EMERGENCY SPILLWAY EL=68.00

2' DIA. PERFORATED NYLOPLAST AREA DRAIN WITH BEEHIVE GRATE

GRAVEL WETLAND 3
4,004 SF
SURFACE EL=67.00

SED. FOREBAY EL=67.00

OCS RIM 68.70
INV IN 63.84
6" INV OUT=66.85
0.875" ORIFICE=66.12
INV OUT OVERFLOW 66.92

40 LF 6" PVC
@ S=0.009

6" INV OUT=65.47

LEVEL LIP SPREADER

INV OUT=64.63

VP-02-03/URS A

LEVEL LIP SPREADER
EMERGENCY SPILLWAY
EL=66.05

GRADING BERM

2' DIA. PERFORATED NYLOPLAST AREA DRAIN WITH BEEHIVE GRATE

5' CURB CUT
VP-02-04

VP-02-05/URS B

ROCK SANDWICH

5' CURB CUT

PERMANENT SLOPE STABILIZATION ON SLOPES 2:1 AND GREATER

VP-02-07/URS C

OCS RIM 68.53
1.5" ORIFICE=65.95
INV IN 63.66
INV OUT=66.65
INV OUT OVERFLOW=66.53

20 LF 4" PVC
@ S=0.005

LEVEL LIP SPREADER
INV OUT=65.73

EMERGENCY SPILLWAY EL=68.20

ROCK SANDWICH

GRAVEL WETLAND 4
7,212 SF
SURFACE EL=66.30

SED. FOREBAY EL=66.80

MATCH LINE
SEE SHT. C-06

100' PROPOSED PIPELINE EASEMENT

INV OUT=65.00
10 LF 4" PVC
@ S=0.13

OCS
0.75" ORIFICE=65.27
4" INV OUT=66.30

2' DIA. PERFORATED NYLOPLAST AREA DRAIN WITH BEEHIVE GRATE (TYP.)

LEVEL LIP SPREADER

6" PVC ROOF DRAIN

RIP-RAP OUTLET PROTECTION

10' WIDE EMERGENCY SPILLWAY EL=66.70

GRAVEL WETLAND 5
2,175 SF
SURFACE EL=65.60

UNIT 3
10,000 S.F.
1 STORY
F.F. EL. 68.50

UNIT 4
19,000 S.F.
2 STORY
F.F. EL. 70.25

SEDIMENT FOREBAY EL=66.85

SEDIMENT FOREBAY EL=66.20

5' CURB CUT (TYP.)

INV. OUT EL. 58.80

DAYLIGHT ROADWAY UNDERDRAIN

INV. IN EL. 59.00

GRAVEL WETLAND 1
5,782 SF
SURFACE EL=65.60

15" RCP

10 LF 8" PVC
@ S=0.012

OCS RIM 67.63
INV IN 62.83
0.875" ORIFICE=65.10
INV OUT=62.71

PERFORATED 6" PIPE

INV OUT=61.00
40 LF 4" PVC
@ S=0.046

2' OCS RIM=67.00
4" INV OUT=62.84

UNDERDRAINED SOIL FILTER 3
FILTER EL=65.00

PROVIDE PERMANENT SLOPE STABILIZATION ON SLOPES 2:1 AND GREATER

10' WIDE EMERGENCY SPILLWAY EL=42.00

UNDERDRAINED SOIL FILTER 1
FILTER EL=40.00

2' OCS RIM=41.80
4" INV OUT=37.84

29 LF 4" PVC
@ S=0.029

INV OUT=37.00

LEVEL LIP SPREADER

INV OUT=38.00

32 LF 4" PVC
@ S=0.026

2' OCS RIM=42.70
4" INV OUT=38.84

10' WIDE EMERGENCY SPILLWAY EL=43.00

UNDERDRAINED SOIL FILTER 2
FILTER EL=41.00

EROSION CONTROL MATTING

10' WIDE EMERGENCY SPILLWAY EL=67.00

5' CURB CUT (TYP.)

EHWPCL3

LEVEL LIP SPREADER

90° BEND WITH CLEANOUT

INV OUT=48.00

6" PVC ROOF DRAIN
@ S=0.005

RIP-RAP OUTLET PROTECTION

EROSION CONTROL MATTING

65 LF 4" PVC
@ S=0.167

EHWPCL2

2' OCS RIM=64.00
4" INV OUT=58.84

UNDERDRAINED SOIL FILTER 4
FILTER EL=61.00

10' WIDE EMERGENCY SPILLWAY EL=64.00

UNIT 1
42,000 S.F.
2 STORY
F.F. EL. 66.00

5' CURB CUT (TYP.)

5' CURB CUT (TYP.)

5' CURB CUT (TYP.)

SED. FOREBAY EL=63.00

LEVEL LIP SPREADER
WP1

INV OUT=58.00
21 LF 6" PVC
@ S=0.040

20' WIDE EMERGENCY SPILLWAY EL=63.00

2' OCS RIM=63.00
6" INV OUT=58.84

UNDERDRAINED SOIL FILTER 5
FILTER EL=61.00

EH2

EH4

EHCL2

TRAIL (APPROX.)

NOTE:

ONLY THE GRADING AND DRAINAGE ASSOCIATED WITH LCE 4 WILL BE CONSTRUCTED AT THIS TIME. GRADING AND DRAINAGE FOR ALL OTHER UNITS IS SHOWN FOR INFORMATIONAL PURPOSES ONLY. GRADING AND DRAINAGE WILL BE REEVALUATED AND PERMITTED FOR THE DEVELOPMENT OF EACH UNIT.

BAR SCALE
40' 0 40' 80'
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

WOODARD & CURRAN
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STATE OF MAINE
DAVID A. SENUS
10791
REGISTERED PROFESSIONAL ENGINEER

11/20/2015

REV	DESCRIPTION	DATE

DESIGNED BY: AEA/AJS
DRAWN BY: JBC
CHECKED BY: DAS
229001-C-05_06.dwg

TECHNOLOGY PARK GRADING AND DRAINAGE PLAN 1

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: 1" = 40'
SHEET: 6 OF 18

C-05

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24x36 SHEET
1:1

SEE SHT. C-05 MATCH LINE

NOTE:
SEE SHEET G-01 FOR LEGEND

UNIT 4
19,000 S.F.
2 STORY
F.F. EL. 70.25

UNIT 3
10,000 S.F.
1 STORY
F.F. EL. 68.50

UNIT 5
10,000 S.F.
1 STORY
F.F. EL. 70.00

UNIT 6
10,000 S.F.
1 STORY
F.F. EL. 72.00

UNIT 7
20,000 S.F.
2 STORY
F.F. EL. 71.00

SEDIMENT FOREBAY EL=66.85

SEDIMENT FOREBAY EL=66.20

GRAVEL WETLAND 5
2,175 SF
SURFACE EL=65.60

GRAVEL WETLAND 6
5,709 SF
SURFACE EL=65.60

GRAVEL WETLAND 7
6,629 SF
SURFACE EL=64.60

GRAVEL WETLAND 8
7,723 SF
SURFACE EL=66.60

GRAVEL WETLAND 10
5,931 SF
SURFACE EL=65.20

GRAVEL WETLAND 11
5,399 SF
SURFACE ELE=64.60

GRAVEL WETLAND 12
6,384 SF
SURFACE EL=68.60

INV OUT=65.00
10 LF 4" PVC
@ S=0.13
OCS
0.75" ORIFICE=65.27
4" INV OUT=66.30

2' DIA. PERFORATED NYLOPLAST AREA DRAIN WITH BEEHIVE GRATE (TYP.)

6" PVC ROOF DRAIN

LEVEL LIP SPREADER

RIP-RAP OUTLET PROTECTION

10' WIDE EMERGENCY SPILLWAY EL=66.70

5' CURB CUT (TYP.)

PROVIDE ACCESS DRIVE AND TRAILHEAD PARKING AREA. GRASSPAVE2 OR EQUAL, SEE DETAIL SHEET C-12.

ROCK SANDWICH 3. SEE DETAIL SHEET C-11,

PROTECT EXISTING TREE, SEE DETAIL SHEET C-10.

OCS – RIM 67.9
2" ORIFICE=66.52
8" INV OUT=66.27
8" INV OUT 66.94
(OVERFLOW)
100 LF 8" PVC S=0.004
INV OUT 65.87

OCS
1" ORIFICE=65.27
4" INV OUT=66.60

20 LF 4" PVC
@ S=0.01
INV OUT=65.00

LEVEL LIP SPREADER

10' WIDE EMERGENCY SPILLWAY EL=67.10

ROCK SANDWICH 4. SEE DETAIL SHEET C-11,

PROVIDE PERMANENT SLOPE STABILIZATION ON SLOPES 2:1 AND GREATER

10' WIDE EMERGENCY SPILLWAY EL=68.00

OCS
1" ORIFICE=64.27
4" INV OUT=65.20

INV OUT=65.00

26 LF 6" PVC
@ S=0.076

OCS
1.25" ORIFICE=65.07
6" INV OUT=67.00

10 LF 4" PVC
@ S=0.12
INV OUT=64.90

10' WIDE EMERGENCY SPILLWAY EL=65.90

OCS
1.125" ORIFICE=68.27
6" INV OUT=69.70

10' WIDE EMERGENCY SPILLWAY EL=70.20

38 LF 6" PVC
@ S=0.045
INV OUT=68.00

OCS
0.75" ORIFICE=64.27
6" INV OUT=65.60

13 LF 6" PVC
@ S=0.123
INV OUT=64.00

10' WIDE EMERGENCY SPILLWAY EL=66.10

2' DIA. PERFORATED NYLOPLAST AREA DRAIN WITH BEEHIVE GRATE (TYP.)

NOTE:

ONLY THE GRADING AND DRAINAGE ASSOCIATED WITH LCE 4 WILL BE CONSTRUCTED AT THIS TIME. GRADING AND DRAINAGE FOR ALL OTHER UNITS IS SHOWN FOR INFORMATIONAL PURPOSES ONLY. GRADING AND DRAINAGE WILL BE REEVALUATED AND PERMITTED FOR THE DEVELOPMENT OF EACH UNIT.

40' 0 40' 80'
BAR SCALE
1" = 40'
CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

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STATE OF MAINE
DAVID A. SENUS
10791
REGISTERED PROFESSIONAL ENGINEER
11/20/2015

REV	DESCRIPTION	DATE

DESIGNED BY: AEA/AJS
DRAWN BY: JBC
CHECKED BY: DAS
22900-C-05_06.dwg

TECHNOLOGY PARK GRADING AND DRAINAGE PLAN 2

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

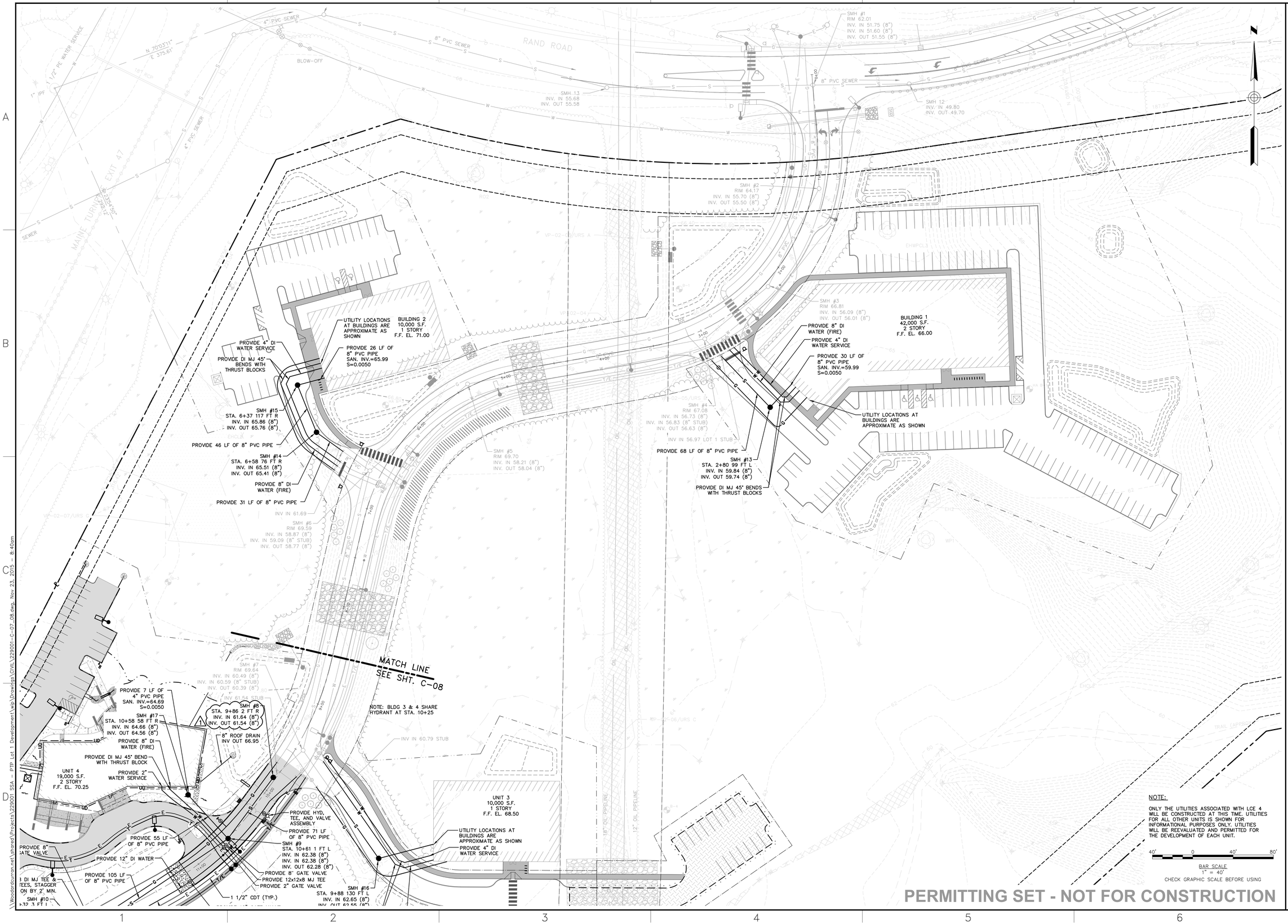
PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: 1" = 40'
SHEET: 7 OF 18

C-06

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24x36 SHEET
1:1



PERMITTING SET - NOT FOR CONSTRUCTION

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WOODARD & CURRAN

STATE OF MAINE · DAVID A. SENUS · 10051 · REGISTERED PROFESSIONAL ENGINEER

11/20/2015

REV.	DESCRIPTION	DATE
1	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15

DESIGNED BY: AEA/LJS | CHECKED BY: DAS
DRAWN BY: JBC | 229001-C-07_08.dwg

TECHNOLOGY PARK UTILITY PLAN 1

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK, UPDATE & LCE 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: 1" = 40'
SHEET: 8 OF 18

C-07

J:\Woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\cip\Drawings\CIVIL\229001-C-07_08.dwg, Nov 23, 2015 – 8:40am

MATCH LINE
SEE SHT. C-07

SMH #7
RIM 69.64
INV. IN 60.49 (8")
INV. IN 60.59 (8" STUB)
INV. OUT 60.39 (8")
INV 61.54 STUB

PROVIDE 7 LF OF 4" PVC PIPE SAN. INV.=64.69 S=0.0050

SMH #17
STA. 10+58 58 FT R
INV. IN 64.66 (8")
INV. OUT 64.56 (8")

SMH #8
STA. 9+86 2 FT R
INV. IN 61.64 (8")
INV. OUT 61.54 (8")

8" ROOF DRAIN
INV OUT 66.95

PROVIDE 8" DI WATER (FIRE)

PROVIDE DI MJ 45° BEND WITH THRUST BLOCK

PROVIDE 2" WATER SERVICE

UNIT 4
19,000 S.F.
2 STORY
F.F. EL. 70.25

INV IN 60.79 STUB

PROVIDE HYD, TEE, AND VALVE ASSEMBLY

PROVIDE 71 LF OF 8" PVC PIPE

SMH #9
STA. 10+61 1 FT L
INV. IN 62.38 (8")
INV. IN 62.38 (8")
INV. OUT 62.28 (8")

PROVIDE 8" GATE VALVE

PROVIDE 12x12x8 MJ TEE

PROVIDE 2" GATE VALVE

PROVIDE 55 LF OF 8" PVC PIPE

PROVIDE 8" GATE VALVE

PROVIDE 12" DI WATER

PROVIDE 105 LF OF 8" PVC PIPE

PROVIDE 12X12X8 DI MJ TEE & 12X12X4 DI MJ TEES, STAGGER SERVICE CONNECTION BY 2' MIN.

1 1/2" CDT (TYP.)

PROVIDE 12" GATE VALVE

SMH #10
STA. 12+32 3 FT L
INV. IN 63.31 (8")
INV. IN 63.31 (8")
INV. OUT 63.21 (8")

PROVIDE 1" AIR VALVE AT HIGH POINT

SMH #16
STA. 9+88 130 FT L
INV. IN 62.65 (8")
INV. OUT 62.55 (8")

UNIT 3
10,000 S.F.
1 STORY
F.F. EL. 68.50

UTILITY LOCATIONS AT BUILDINGS ARE APPROXIMATE AS SHOWN

PROVIDE 4" DI WATER SERVICE

PROVIDE DI MJ 45° BENDS WITH THRUST BLOCKS

PROVIDE 8" DI WATER (FIRE)

SMH #11
STA. 13+84 26 FT R
INV. IN 64.15 (8")
INV. OUT 64.05 (8")

PROVIDE 148 LF OF 8" PVC PIPE

PROVIDE 45 LF OF 8" PVC PIPE

SMH #19
STA. 14+60 5 FT R
INV. IN 64.63 (8")
INV. OUT 64.53 (8")

PROVIDE 75 LF OF 8" PVC PIPE

UTILITIES SHALL BE CONSTRUCTED BELOW PERMEABLE ROCK BASE AT ROCK SANDWICH LOCATIONS, REFER TO ROCK SANDWICH DETAIL, TYP.

PROVIDE 76 LF OF 8" PVC PIPE

SMH #12
STA. 15+38 8 FT R
INV. IN 65.21 (8")
INV. IN 65.21 (8")
INV. OUT 65.01 (8")

PROVIDE BLOW-OFF VALVE WITH THRUST BLOCK

PROVIDE 23 LF OF 8" PVC PIPE SAN. INV.=65.33 S=0.0050

UTILITY LOCATIONS AT BUILDINGS ARE APPROXIMATE AS SHOWN

UNIT 5
10,000 S.F.
1 STORY
F.F. EL. 70.00

PROVIDE 4" DI WATER SERVICE

PROVIDE 8" DI WATER (FIRE)

PROVIDE 4" GATE VALVE

SMH #18
STA. 12+32 52 FT L
INV. IN 65.33 (8")
INV. OUT 65.23 (8")

PROVIDE 27 LF OF 8" PVC PIPE SAN. INV.=65.46 S=0.0050

PROVIDE DI MJ 45° BENDS WITH THRUST BLOCKS

LIGHT BASE (TYP.)

PROVIDE 1" AIR VALVE AT HIGH POINT

PROVIDE HYDRANT, TEE, AND VALVE ASSEMBLY

PROVIDE (2) 12X12X8 DI MJ TEES & (2) 12X12X4 DI MJ TEES, (2) 8" GATE VALVES, (2) 4" GATE VALVES, STAGGER SERVICE CONNECTION BY 2' MIN.

UNIT 6
10,000 S.F.
1 STORY
F.F. EL. 72.00

PROVIDE 8" DI WATER (FIRE)

PROVIDE 4" DI WATER SERVICE

UTILITY LOCATIONS AT BUILDINGS ARE APPROXIMATE AS SHOWN

PROVIDE 39 LF OF 8" PVC PIPE SAN. INV.=65.41 S=0.0050

PROVIDE 8" DI WATER (FIRE)

UNIT 7
20,000 S.F.
2 STORY
F.F. EL. 71.00

PROVIDE 4" DI WATER SERVICE

UTILITY LOCATIONS AT BUILDINGS ARE APPROXIMATE AS SHOWN

UNITIL 20' WIDE GAS LINE EASEMENT

GAS SUPPLY FROM WESTBROOK STREET, INSTALLED BY OTHERS, FINAL LOCATIONS TBD

NOTE:

ONLY THE UTILITIES ASSOCIATED WITH LCE 4 WILL BE CONSTRUCTED AT THIS TIME. UTILITIES FOR ALL OTHER UNITS IS SHOWN FOR INFORMATIONAL PURPOSES ONLY. UTILITIES WILL BE REEVALUATED AND PERMITTED FOR THE DEVELOPMENT OF EACH UNIT.

40' 0 40' 80'

BAR SCALE
1" = 40'

CHECK GRAPHIC SCALE BEFORE USING

PERMITTING SET - NOT FOR CONSTRUCTION

41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

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WOODARD & CURRAN

STATE OF MAINE
DAVID A. SENUS
10751
REGISTERED PROFESSIONAL ENGINEER

11/20/2015

REV.	DESCRIPTION	DATE
1	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15

DESIGNED BY: AEA/LJS
DRAWN BY: JBC
CHECKED BY: DAS
229001-C-07_08.dwg

TECHNOLOGY PARK UTILITY PLAN 2

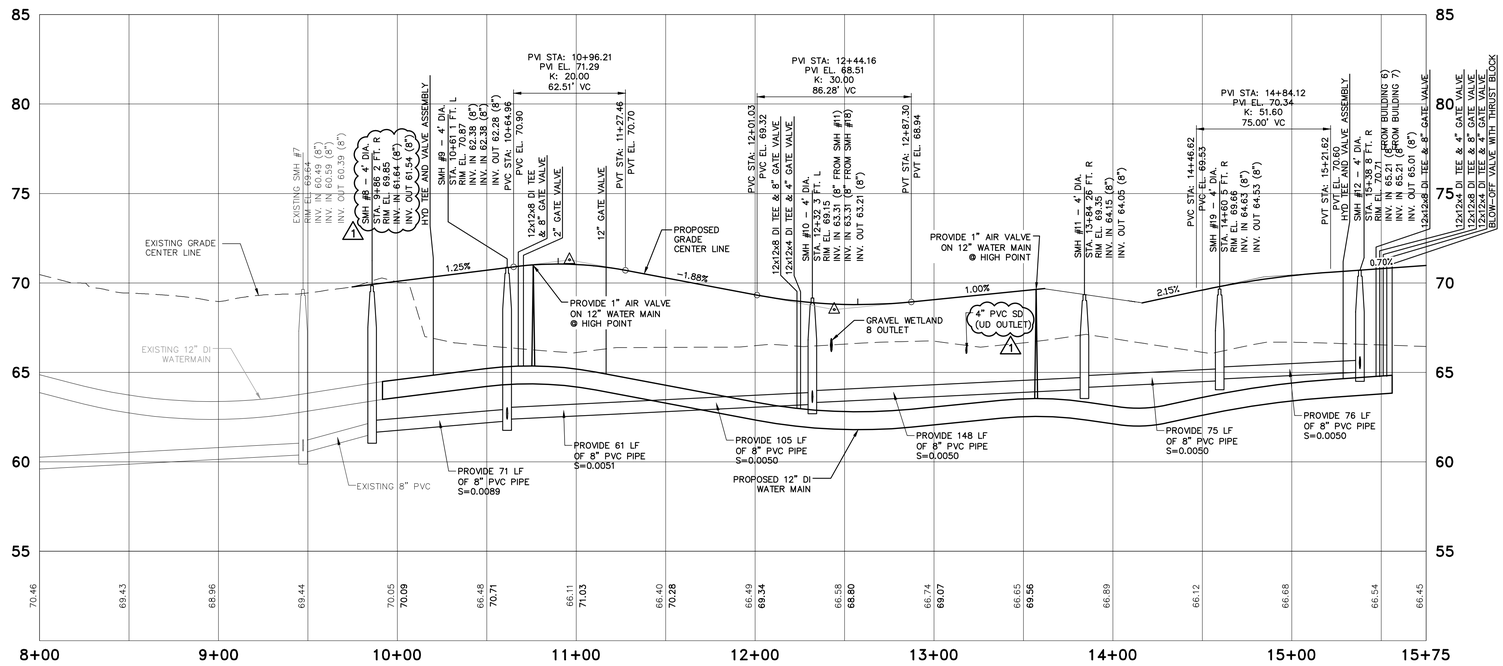
CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: 1" = 40'
SHEET: 9 OF 18

C-08

\\Woodardcurran.net\shared\Projects\229001 SSA - PTP Lot 1 Development\sip\Drawings\CIVIL\229001-C-07_08.dwg, Nov 23, 2015 - 8:41am



ROADWAY PROFILE

SCALE: 1"=40' HORIZONTAL
1"=4' VERTICAL

\\Woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\Civil\229001-C-09.dwg Nov 23, 2015 - 8:56am

PERMITTING SET - NOT FOR CONSTRUCTION

24x36 SHEET
1:1

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DAVID A. SENUS 07951 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER

11/20/2015

REV	DESCRIPTION	DATE
1	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15
DESIGNED BY: AEA/JLS	CHECKED BY: DAS	
DRAWN BY: JBC	229001-C-09.dwg	

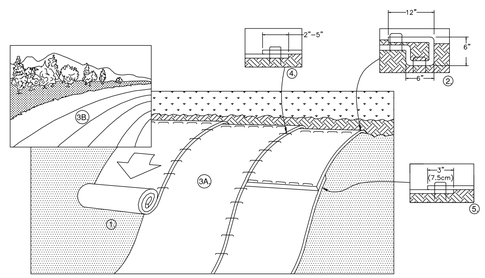
ROADWAY PROFILE
STA. 8+00 TO STA. 15+75

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LOT 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: AS NOTED
SHEET: 10 OF 18

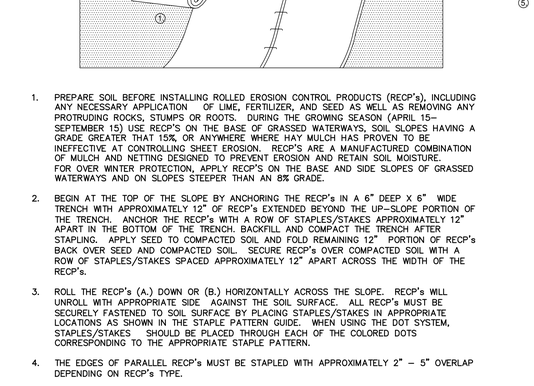
C-09



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED AS WELL AS REMOVING ANY PROTRUDING ROCKS, STUMPS OR ROOTS. DURING THE GROWING SEASON (APRIL 15– SEPTEMBER 15) USE RECP'S ON THE BASE OF GRASSED WATERWAYS, SOIL SLOPES HAVING A GRADE GREATER THAT 15% OR ANYWHERE WHERE HAY MULCH HAS PROVEN TO BE INEFFECTIVE AT CONTROLLING SHEET EROSION. RECP'S ARE A MANUFACTURED COMBINATION OF MULCH AND NETTING DESIGNED TO PREVENT EROSION AND RETAIN SOIL MOISTURE. FOR OVER WINTER PROTECTION, APPLY RECP'S ON THE BASE AND SIDE SLOPES OF GRASSED WATERWAYS AND ON SLOPES STEEPER THAN AN 8% GRADE.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP's EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's 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 COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSTHE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP's WIDTH. NOTE: *IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.
6. UNTIL GRASS IS ABUNDANT, INSPECT PERIODICALLY AND AFTER EACH RAINSTORM TO CHECK FOR EROSION. IMMEDIATELY REPAIR AND ADD MORE MULCH UNTIL GRASSES ARE FIRMLY ESTABLISHED. DO NOT MOW THE FIRST YEAR.

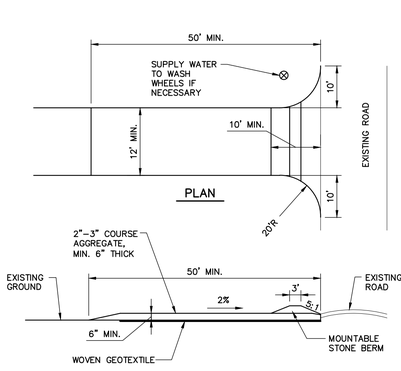
ROLLED EROSION CONTROL MATTING

N.T.S.



TREE PROTECTION DETAIL

N.T.S.



PROFILE

NOTES:

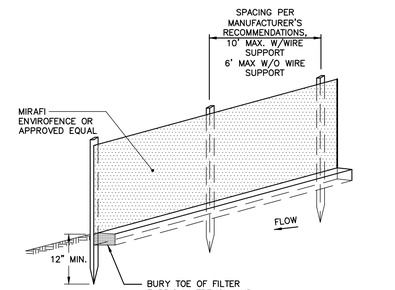
- CONSTRUCTION ENTRANCES MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
- WHEEL WASH PITS MAY ALSO BE USED, IF APPROVED.
- WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN

MAINTENANCE: INSPECT FOR EFFECTIVE REMOVAL OF SOIL FROM VEHICLES PRIOR TO LEAVING THE SITE. SWEEP ANY SOIL FROM ADJACENT ROADWAYS.

REMOVAL: AT LEAST ONE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL ALL AREAS OF THE SITE ARE STABILIZED.

STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.



NOTES:

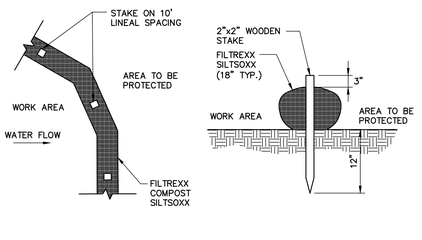
- INSTALL FABRIC ON UPHILL SIDE OF SUPPORT POSTS
- INSTALL SILT FENCE ACROSS SLOPES
- SILT FENCE SHALL NOT BE USED IN DRAINAGE WAYS

MAINTENANCE: INSPECT FOR TEARS IN THE FABRIC OR DAMAGE TO SUPPORTS. REPAIR AS NECESSARY. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES A DEPTH OF SIX–INCHES OR LESS.

REMOVAL: WHEN UPSLOPE AREAS ARE STABILIZED, THE STRUCTURE AND ANY ACCUMULATED SEDIMENT WILL BE REMOVED.

SEDIMENT BARRIER – SILTATION FENCE DETAIL

N.T.S.



SEDIMENT BARRIER – SILTSOXX

N.T.S.

EROSION AND SEDIMENT CONTROL NOTES

Temporary Erosion Control

Contractor shall prepare and submit a soil erosion and water pollution control plan to engineer in accordance with Section 656.

Measure	Dates For Use	Timing, Activity, and Location
Sedimentation Barrier	ALL	Before soil disturbance, install downhill of areas to be disturbed and around material stockpiles.
Up–slope Diversion	ALL	Before soil disturbance, install uphill of areas to be disturbed and material stockpiles.
Catch Basin Protection	ALL	Before soil or pavement disturbance, install ACF Environmental, Inc. High Flow Siltsack, Siltsaver Inlet Filter. or equal, installed per manufacturer's requirements.
Dust Control	ALL	During dry weather, apply water and calcium chloride to control dust.
Temporary Seeding	April 15 to Oct. 1	Soil stockpiles that are not covered and disturbed areas that will not be disturbed again within 14 days. If grass growth provides less than 95% soil coverage by Nov. 1, apply mulch and anchor with erosion control blanket.
Mulch	April 15 to Sept. 15	On all areas of exposed soil prior to rain events or within 7 days apply 100–150 lbs (2.5 bales) per 1,000 sq ft. by mechanical blower.
Winter Mulch	Sept. 16 to Oct. 31	On all areas of exposed soil prior to precipitation or within 7 days apply 150 to 170 lbs. mulch (4 bales) per 1,000 sq. ft. by mechanical blower,. Erosion control blanket may be used as a substitute for winter mulch.
	Nov. 1 to April 14	On all areas of exposed soil, apply 150 to 170 lbs. mulch (4 bales) per 1,000 sq. ft. and anchor with netting at the end of each working day. Erosion control blanket may be used as a substitute for winter mulch.
Inspections	Until site is permanently stabilized	Inspect the erosion and sedimentation control measures daily, and maintain and repair as necessary.

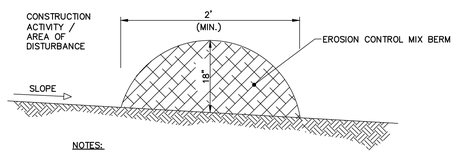
Permanent Erosion Control:

Measure	Dates For Use	Timing, Activity, and Location
Pavement – Base Course – Final Course	When no frost is in ground	Install only in areas shown on the plan, shortly after pavement base is brought to final grade. Install near completion of project.
Permanent Seeding	April 15 to Sept. 15	On final grade areas, within 7 days of grade preparation, prepare topsoil, followed by seed and mulch application.
Dormant Seeding	Sept. 16 to April 15	On final grade areas, with prepared topsoil. Apply seed at double the specified rate on bare soil, and follow with an application of winter mulch.
Ground Cover, Trees, Shrubs	April 15 to Nov. 1	Install with final landscaping.
Permanent Mulch	ALL	Install with final landscaping.

Inspections:

Regular inspections of all erosion and sedimentation controls shall be made at least weekly and prior to and following storm events. Minimum inspections shall be made as listed in the table below.

Inspected Item	Look For
Mulched Surfaces	Thin mulch or inadequate application. Wind movement.
Seeded Surfaces	Poor seed germination. Loss of mulch. Development of rivulets.
Sediment Barrier	Sediment build–up to one half the height of the barrier. Undermining of the barrier. Supporting stakes loose, toppled, or unmarked. Breaks in barrier.
Perimeter Diversion	Discharge is to stabilized area. Erosion or breaks in barrier. Supporting stakes loose, toppled or unmarked.
Catch Basin Protection	Sediment build–up and structure blockages. Slow flow/Ponding water. Breaks in fabric or voids in barrier.
Dewatering Filter	Breaks in fabric or supporting structure. Slow flow, indicating high sediment build–up.
Construction Entrance	Sedimentation of roadways. Off–site dust complaints.



NOTES:

Erosion Control Mix Berms

Erosion control mix can be manufactured on or off the project site. It must consist primarily of organic material and may include: shredded bark, stump grindings, composted bark, or acceptable manufactured products. Wood and bark chips, ground construction debris or reprocessed wood products will not be acceptable as the organic component of the mix.

Composition

Erosion control mix shall contain a well–graded mixture of particle sizes and may contain rocks less than 4" in diameter. Erosion control mix must be free of refuse, physical contaminants, and material toxic to plant growth. The mix composition shall meet the following standards:

- The organic matter content shall be between 80 and 100%, dry weight basis.
- Particle size by weight shall be 100 % passing a 6" screen and a minimum of 70%, maximum of 85%, passing a 0.75" screen.
- The organic portion needs to be fibrous and elongated.
- Large portions of silts, clays or fine sands are not acceptable in the mix.
- Soluble salts content shall be < 4.0 mmhos/cm.
- The pH should fall between 5.0 and 8.0.

SEDIMENT BARRIER – EROSION CONTROL MIX BERM

N.T.S.

EROSION AND SEDIMENTATION CONTROL NOTES

TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE THE USE OF STABILIZED CONSTRUCTION ENTRANCES, HYDRAULIC MULCH, HAY AND STRAW MULCH, EROSION CONTROL BLANKET, TURF REINFORCED MATTING, RIPRAP AND TEMPORARY SEEDING. TEMPORARY SEDIMENT CONTROL MEASURES INCLUDE THE USE OF SILT FENCE, EROSION CONTROL MIX BERMS, PLUNGE POOLS, CHECK DAMS, SEDIMENT TRAPS, CATCHBASIN SEDIMENT COLLECTION BAGS AND GEOTEXTILE FILTER BAGS. PERMANENT MEASURES INCLUDE THE USE OF RIPRAP AT EXPOSED STORMDRAIN AND CULVERT INLETS AND OUTLETS, ARMORED SWALES AND SLOPES AND PERMANENT VEGETATION.

GENERAL

A. THE PROJECT SHALL CONFORM WITH THE STANDARDS OF THE MAINE CONSTRUCTION GENERAL PERMIT, IF APPLICABLE.

B. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK PUBLISHED BY THE MAINE DEP UNLESS OTHERWISE NOTED IN THESE PLANS. HTTP: //WWW.MAINE.GOV/DEP/BLWQ/DOCSTAND/ESCBMPS/

C. ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DEEMED NECESSARY BY THE OWNER'S REPRESENTATIVE, DEPARTMENT OF ENVIRONMENTAL PROTECTION, AND/OR MUNICIPAL OFFICIALS SHALL BE INSTALLED BY THE CONTRACTOR.

D. THE CONTRACTOR IS RESPONSIBLE FOR ALL FINES RESULTING FROM EROSION OR SEDIMENTATION FROM THE SITE TO SURROUNDING PROPERTIES, WATER BODIES, OR WETLANDS AS A RESULT OF THIS PROJECT.

E. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE SITE WHENEVER POSSIBLE WHILE ALLOWING PROPER SITE DEVELOPMENT.

F. CONSTRUCTION STAGING SHALL BE CONDUCTED IN A WAY TO MINIMIZE THE POTENTIAL FOR STORMWATER RUN–ON TO DISTURBED AREAS.

G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE ABOVE PERSONNEL. DESCRIPTIONS OF PERMANENT STABILIZATION FOR VARIOUS COVER TYPES FOLLOWS:

i. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS THAT 90% OF THE DISTURBED AREA IS COVERED WITH REASONABLY THICK UNIFORM STAND OF PERMANENT GRASS SPECIES, FREE FROM SIZABLE THIN OR BARE SPOTS.
ii. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THAT COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE OFF.
iii. FOR MULCHED AREAS, PERMANENT STABILIZATION MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL.
iv. FOR AREAS STABILIZED WITH RIPRAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIPRAP HAVE AN APPROPRIATE BACKING OF A WELL–GRADED GRAVEL OR APPROVED GEOTEXTILE. STONE MUST BE SIZED APPROPRIATELY AND IN ACCORDANCE WITH SECTION E–6 OF THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL.
v. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE ASPHALT BINDER COURSE.
vi. FOR OPEN CHANNELS, LEVEL SPREADERS, ENGINEERED BUFFERS OR OTHER DESIGNED STORMWATER CONVEYANCE STRUCTURE, PERMANENT STABILIZATION MEANS THE CHANNELIZED AREA(S) IS STABILIZED WITH MATURE VEGETATION AT LEAST THREE INCHES IN HEIGHT, WITH APPROVED RIPRAP, OR WITH OTHER NON–EROSIVE LINING CAPABLE OF WITHSTANDING THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHOUT RELIANCE ON CHECK DAMS TO SLOW FLOW. THERE SHALL BE NO EVIDENCE OF SLUMPING, UNDERCUTTING OR DOWNCUTTING OF THE DESIGNED CHANNEL.

H. IF THE AREA WILL REMAIN UNWORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, AND WILL NOT BE BUILT ON, THEN IMMEDIATELY PROVIDE PERMANENT STABILIZATION USING VEGETATION THROUGH PLANTING, SEEDING, SOD OR THROUGH THE USE OF PERMANENT MULCH OR RIPRAP. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS. AMEND AREAS OF DISTURBED, OVERLY–COMPACTED SUBSOIL WITH TOPSOIL OR COMPOST AND LIGHTLY TILL 2–3" OF SOIL AMENDMENTS INTO THE TOP 8" OF SOIL.

I. PERMANENT SEEDING SPECIFICATION: IT IS RECOMMENDED THAT PERMANENT SEEDING BE COMPLETED BETWEEN APRIL 1 AND AUGUST 15 OF EACH YEAR. LATE SEASON SEEDING MAY BE DONE BETWEEN AUGUST 15 AND SEPTEMBER 15. AREAS NOT SEEDED OR WHICH DO NOT OBTAIN A SATISFACTORY GROWTH BY OCTOBER 1 SHALL BE SEEDED WITH AROOSTOOK WINTER RYE OR MULCHED AT SPECIFIED RATES. SEE WINTER SEEDING AND MULCHING SPECIFICATIONS FOR STABILIZATION AFTER NOVEMBER 1.

i. APPLY TOPSOIL TO A DEPTH OF 4 INCHES. IN COMPACTED AREAS TILL 2–3" OF COMPOST INTO UPPER 8" OF DISTURBED SOIL AND THEN APPLY 4 INCHES OF TOPSOIL.
ii. APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS. IN LIEU OF SOIL TESTS, APPLY GROUND LIMESTONE AT A RATE OF 33 LBS PER 1000 SQUARE FEET AND GRANULAR, COMMERCIAL–GRADE FERTILIZER 10–10–10 AT A RATE OF 18 LBS PER 1000 SQUARE FEET.
iii. UNIFORMLY APPLY SEED MIXTURE AT THE RECOMMENDED SEEDING RATES AND DATES, APPLY HAY OR STRAW MULCH AT A RATE OF 2.5 BALES PER 1000 SQUARE FEET AND ANCHOR AS NECESSARY.
iv. THE SEED MIXTURE FOR LAWN AREAS SHALL CONSIST OF SEEDS PROPORTIONED BY WEIGHT AS FOLLOWS:
1. 10% CREEPING RED FESCUE
2. 25% KENTUCKY BLUEGRASS
3. 60% PERENNIAL RYE GRASS
4. 5% ANNUAL RYEGRASS
v. THE SEED MIXTURE FOR NON–LAWN AREAS WITH LOW–MAINTENANCE SHALL CONSIST OF SEEDS PROPORTIONED BY WEIGHT AS FOLLOWS:
1. 50% CREEPING RED FESCUE
2. 25% TALL FESCUE
3. 10% ANNUAL RYEGRASS
4. 10% WHITE CLOVER
5. 5% RED TOP

J. PROTECT ALL SEEDED AREAS WITH MULCH OR EROSION CONTROL BLANKET IN AREAS OF SHEET OR CONCENTRATED FLOWS. MULCH ALL AREAS SO THAT SOIL IS NOT VISIBLE THROUGH THE MULCH REGARDLESS OF THE APPLICATION RATE. SCHEDULE SEEDING OR SODDING TO AVOID FAILURE DUE TO SUMMER DROUGHT AND FALL FROST. NEWLY SEEDED AREAS SHOULD BE PROTECTED FROM VEHICLE TRAFFIC, PEDESTRIAN TRAFFIC AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL ESTABLISHED. AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE OR SURFACE EROSION IS EVIDENT.

K. DITCH LININGS AND RIPRAP INLET AND OUTLET PROTECTION SHALL BE INSTALLED WITHIN 48 HOURS OF COMPLETING THE GRADING OF THAT SECTION OF DITCH OR INSTALLATION OF THE CULVERT.

L. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL PERMANENT SLOPES STEEPER THAN 3:1, IN THE BASE OF DITCHES AND ANY DISTURBED AREAS WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE (WETLANDS AND WATER RESOURCES). EROSION CONTROL BLANKET SHALL BE NORTH AMERICAN GREEN S150BN OR APPROVED EQUAL. EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

M. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURE UPON STABILIZATION OF PROJECT AREA & COST SHALL BE INCIDENTAL TO CONTRACT.

WINTER CONDITIONS

A. WINTER CONSTRUCTION IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 1. IF AREAS WITHIN THE CONSTRUCTION AREA ARE NOT STABILIZED WITH TEMPORARY OR PERMANENT MEASURES OUTLINED ABOVE BY NOVEMBER 15 THEN THE SITE MUST BE PROTECTED WITH ADDITIONAL STABILIZATION MEASURES THAT ARE SPECIFIC TO WINTER CONDITIONS.

GOOD HOUSEKEEPING AND POLLUTION PREVENTION

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 RUNOFF AND APPROPRIATE SPILL PREVENTION, CONTAINMENT AND RESPONSE PLANNING AND IMPLEMENTATION.

B. DURING CONSTRUCTION, PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUND OR SURFACE WATERS MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO INFILTRATION AREAS. AN "INFILTRATION AREA" IS ANY ARE OF THE SITE THAT BY DESIGN, OR AS A RESULTS OF SOIL AND TOPOGRAPHY, ACCUMULATES RUNOFF THAT INFILTRATES IN THE SOIL. DIKES, BERMS, SUMPS AND OTHER FORMS OF TEMPORARY 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. LOCATE ALL MATERIAL STOCKPILES WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

D. TAKE ALL REASONABLE MEASURES TO MINIMIZE DUST RESULTING FROM THE PROJECT. OIL MAY NOT BE USED FOR DUST CONTROL.

E. LOCATE ALL LITTER, CONSTRUCTION DEBRIS AND CONSTRUCTION CHEMICALS WITH CONSIDERATION FOR STORMWATER DRAINAGE PATTERNS AND INFRASTRUCTURE.

F. TRENCH OR FOUNDATION DE–WATERING MUST BE SPREAD THROUGH SUFFICIENT NATURAL BUFFERS THAT HAVE CAPACITY TO INFILTRATE THE PUMPED WATER OR SHOULD BE PUMPED TO DESIGNED CONSTRUCTION DEWATERING DEVICES AS DESCRIBED IN THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK.

G. SEDIMENTS AND SOIL MATERIALS SHOULD BE SWEPT FROM PAVED SURFACES AT THE END OF EACH WORKDAY OR PRIOR TO RAIN EVENTS, WHENEVER POSSIBLE.

INSPECTION AND MAINTENANCE

A. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROLS, INCLUDING THE STANDARDS IN THE MAINE CONSTRUCTION GENERAL PERMIT, THE MAINE EROSION AND SEDIMENT CONTROL BMPS HANDBOOK AND ANY MUNICIPAL REQUIREMENTS MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF ADDITIONAL BMPS OR MODIFICATIONS TO BMPS ARE NECESSARY, THE MODIFICATIONS MUST BE IMPLEMENTED WITH 7 CALENDAR DAYS OR PRIOR TO ANY PRECIPITATION EVENT. ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

B. AN INSPECTION AND MAINTENANCE LOG MUST BE KEPT BY THE CONTRACTOR, SUMMARIZING THE SCOPE OF THE INSPECTION, DATE, AND MAJOR OBSERVATIONS RELATING TO THE OPERATION OF EROSION AND SEDIMENT CONTROL BMPS, MATERIAL STORAGE AREAS, AND VEHICLE ACCESS POINTS TO THE CONSTRUCTION AREA. THE INSPECTION LOG SHOULD BE DELIVERED TO THE PROPERTY OWNER OR RESPONSIBLE CONTRACTING ENTITY UPON COMPLETION OF THE PROJECT.

EROSION AND SEDIMENT CONTROL PLAN GOALS

THE OVERALL GOAL OF THE SOIL EROSION AND SEDIMENTATION PLAN IS TO RESTRICT THE POTENTIAL FOR EROSION AND SEDIMENTATION AT THE SITE AND DOWN–GRADIENT OF THE SITE. A VARIETY OF EROSION CONTROL TECHNIQUES WILL BE IMPLEMENTED TO ACHIEVE GOAL. DURING CONSTRUCTION, THESE INCLUDE:

- POSITIVE GRADES THROUGHOUT THE CONSTRUCTION SITE TO DIRECT FLOW TO SEDIMENT CONTROL BARRIERS;
- DIVERSION BARRIERS TO KEEP UPSLOPE RUNOFF FROM FLOWING THROUGH THE CONSTRUCTION SITE;
- PRESERVING AND MAINTAINING VEGETATED AREAS TO THE MAXIMUM EXTENT POSSIBLE;
- INSTALLATION AND MAINTENANCE OF SEDIMENTATION BARRIERS ADJACENT TO THE PROJECT;
- INSTALLATION AND MAINTENANCE OF CONSTRUCTION ENTRANCES AT THE TRAVELED INTERFACE BETWEEN STABILIZED AND NON–STABILIZED PORTIONS OF THE PROJECT SITE;
- PERMANENT SEEDING AND MULCHING APPLIED AS SOON AS AREAS ARE AT FINAL GRADES; AND
- INSPECTION OF ALL IN–PLACE MEASURES AFTER EVERY SIGNIFICANT RAINFALL UNTIL PERMANENT MEASURES ARE IN PLACE.

PERMITTING SET - NOT FOR CONSTRUCTION

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DAVID A. SENUS — 11/20/2015

REV	DESCRIPTION	DATE
1	PER DEP COMMENTS	7/22/15

DESIGNED BY: AEA/LJS
DRAWN BY: JBC
CHECKED BY: DAS
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SOIL EROSION AND SEDIMENT CONTROL DETAILS

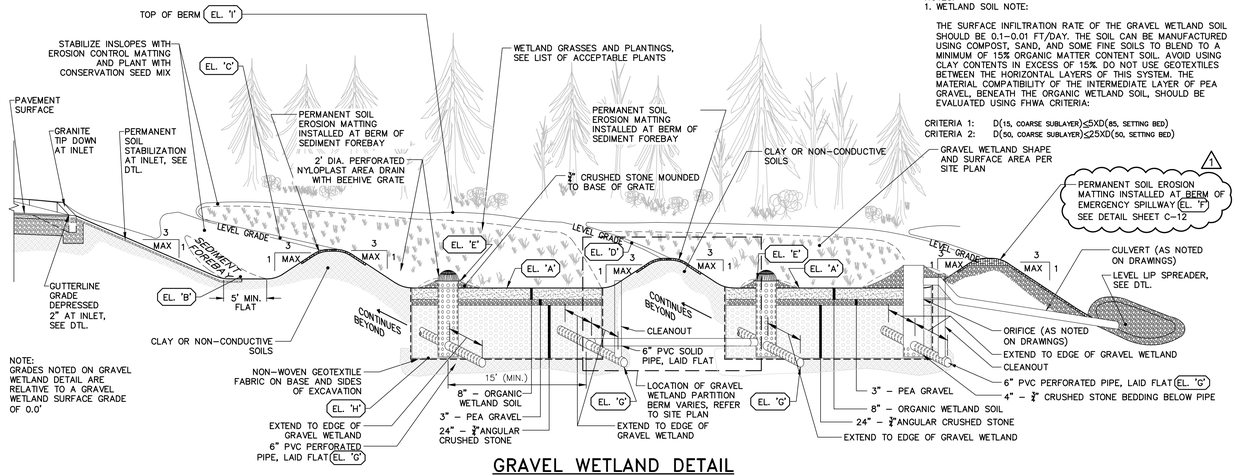
CITY OF PORTLAND
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& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE & LOT 4 DEVELOPMENT

JOB NO.: 229001.01
DATE: NOVEMBER 2015
SCALE: AS NOTED
SHEET: 11 OF 18

C-10

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NOTE:
GRADES NOTED ON GRAVEL WETLAND DETAIL ARE RELATIVE TO A GRAVEL WETLAND SURFACE GRADE OF 0.0'

GRAVEL WETLAND DETAIL
N.T.S.

NOTES:
1. WETLAND SOIL NOTE:

THE SURFACE INFILTRATION RATE OF THE GRAVEL WETLAND SOIL SHOULD BE 0.1–0.01 FT/DAY. THE SOIL CAN BE MANUFACTURED USING COMPOST, SAND, AND SOME FINE SOILS TO BLEND TO A MINIMUM OF 15% ORGANIC MATTER CONTENT SOIL. AVOID USING CLAY CONTENTS IN EXCESS OF 15%. DO NOT USE GEOTEXTILES BETWEEN THE HORIZONTAL LAYERS OF THIS SYSTEM. THE MATERIAL COMPATIBILITY OF THE INTERMEDIATE LAYER OF PEA GRAVEL, BENEATH THE ORGANIC WETLAND SOIL, SHOULD BE EVALUATED USING FHWA CRITERIA:

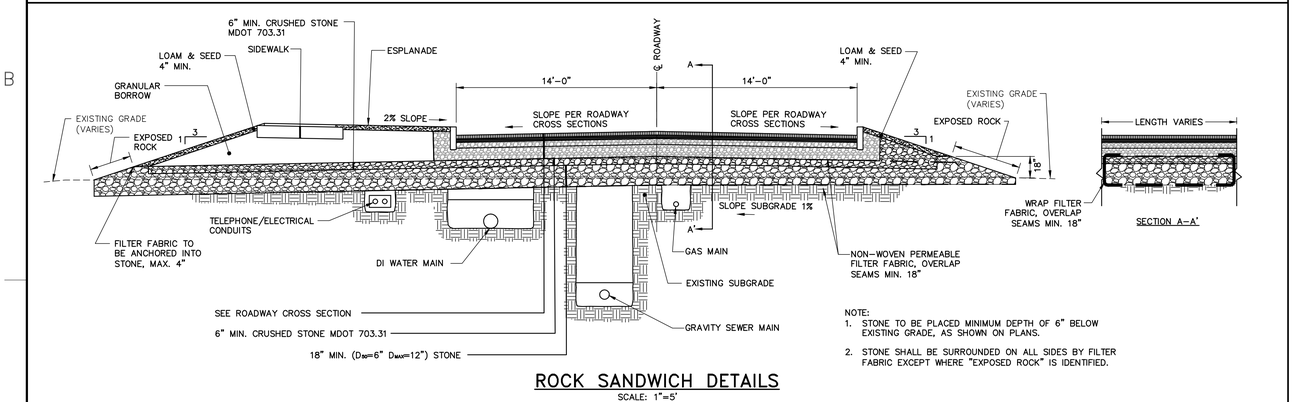
CRITERIA 1: $D_{(15,\ COARSE\ SUBLAYER)} \leq 5 \times D_{(85,\ SETTING\ BED)}$
CRITERIA 2: $D_{(50,\ COARSE\ SUBLAYER)} \leq 25 \times D_{(50,\ SETTING\ BED)}$

GRAVEL WETLAND SCHEDULE

GRAVEL WETLAND NO.	A	B	C	D	E	F	G	H	I
1	CONSTRUCTED								
2	67.40	68.00	68.20	67.80	67.65	69.15	64.82	64.48	69.60
3	CONSTRUCTED								
4	CONSTRUCTED								
5	65.60	–	–	66.00	65.85	66.70	63.02	62.68	67.80
6	65.60	66.20	66.40	66.00	65.85	67.10	63.02	62.68	67.60
7	64.60	65.20	65.40	65.00	64.85	65.90	62.02	61.68	66.60
8	66.60	66.85	67.35	67.10	66.85	67.60	64.02	63.69	68.40
9	ELIMINATED								
10	65.20	66.60	67.00	65.60	65.45	68.00	62.62	62.28	68.60
11	64.60	65.20	65.40	65.00	64.85	66.10	62.02	61.68	66.60
12	68.60	69.20	69.40	69.00	68.85	70.20	66.02	65.68	70.60

OUTLET CONTROL STRUCTURE SCHEDULE

GRAVEL WETLAND NO.	J	K	L	M	N
1	CONSTRUCTED				
2	0.75"	67.07	4"	68.65	69.98
3	CONSTRUCTED				
4	CONSTRUCTED				
5	0.75"	65.27	4"	66.30	67.63
6	1"	65.27	4"	66.60	67.93
7	1"	64.27	4"	65.20	66.53
8	2"	66.52	8"	66.94	67.90
9	ELIMINATED				
10	1.25"	65.07	6"	67.00	68.50
11	0.75"	64.27	6"	65.60	67.10
12	1.125"	68.27	6"	69.70	71.20



NOTE:
1. STONE TO BE PLACED MINIMUM DEPTH OF 6" BELOW EXISTING GRADE, AS SHOWN ON PLANS.
2. STONE SHALL BE SURROUNDED ON ALL SIDES BY FILTER FABRIC EXCEPT WHERE "EXPOSED ROCK" IS IDENTIFIED.

ROCK SANDWICH DETAILS
SCALE: 1"=5'

SOIL FILTER NOTES:

1. THE SOIL FILTER MEDIA MUST NOT BE INSTALLED UNTIL THE ENTIRE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURES UNLESS THE RUNOFF IS DIVERTED AROUND THE FILTER.
2. THE AREA THAT DRAINS TO THE SOIL FILTER SHALL BE KEPT STABLE, AVOIDING EROSION AND DEPOSITION OF SEDIMENTS INTO THE STORMWATER MANAGEMENT SYSTEM. ABSOLUTELY NO RUNOFF IS TO ENTER THE FILTER UNTIL ALL CONTRIBUTING DRAINAGE AREAS HAVE BEEN SUFFICIENTLY STABILIZED.
3. ADDITIONAL SURFACE LOAM MAY BE UTILIZED TO PROMOTE GRASS SEED GERMINATION. LOAM SHALL CONSIST OF NO MORE THAN ½ DEPTH OF NATIVE SANDY LOAM LIGHTLY RAKED INTO THE SOIL FILTER SURFACE.
4. SOIL FILTER MEDIA SHALL BE A LOAMY SAND SOIL COMBINED WITH 30% BY VOLUME OF MODERATELY FINE, WOOD FIBER OR BARK MULCH.

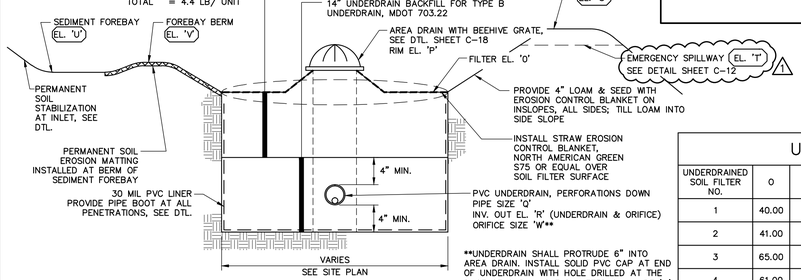
   LOAMY SAND SHALL CONSIST OF NATIVE LOAMY SAND THAT CONTAINS 8–15% PASSING THE #200 SIEVE AND NO MORE THAN 2% CLAY AS DETERMINED THROUGH SOIL TEXTURAL ANALYSIS.

   WOOD FIBER MULCH SHALL CONSIST OF A MODERATELY FINE, WELL COMPOSTED BARK FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH MULCH. THE MULCH SHALL HAVE 100% PASSING A 1" SCREEN.

   THE RESULTING MIXTURE SHALL HAVE GREATER THAN 8% PASSING THE #200 SIEVE.

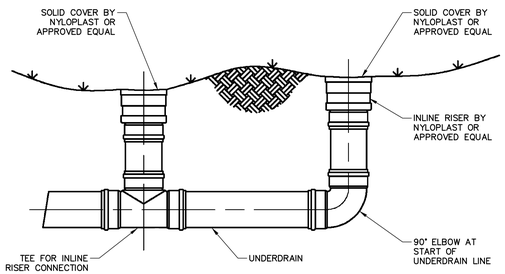
   SOIL FILTER MEDIA SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN 2 INCHES.
5. SEEDING ON SOIL FILTER SURFACE SHALL CONSIST OF MDOT METHOD #2 WITH ADDITION OF 10% BY WEIGHT TALL FESCUE:

METHOD 2 – 4LB/ UNIT	
RED FESCUE	50% = 2LB/ UNIT
SHEEP FESCUE	25% = 1LB/ UNIT
REDTOP	5% = 0.2LB/ UNIT
WHITE CLOVER	10% = 0.4LB/ UNIT
ANNUAL RYE	10% = 0.4LB/ UNIT
METHOD 2 TOTAL	= 4LB/ UNIT
+ TALL FESCUE 10%	= 0.4LB/ UNIT
TOTAL	= 4.4 LB/ UNIT



**UNDERDRAIN SHALL PROTRUDE 6" INTO AREA DRAIN. INSTALL SOLID PVC CAP AT END OF UNDERDRAIN WITH HOLE DRILLED AT THE BASE OF CAP. HOLE DIAMETER SHALL BE 'W' DIMENSION NOTED IN TABLE.

UNDERDRAINED SOIL FILTER
N.T.S.



CLEAN–OUT DETAIL
N.T.S.

UNDERDRAINED SOIL FILTER SCHEDULE

UNDERDRAINED SOIL FILTER NO.	O	P	Q	R	S	T	U	V	W
1	40.00	41.80	4"	37.84	42.50	42.00	N/A	N/A	1"
2	41.00	42.70	4"	38.84	43.50	43.00	N/A	N/A	1"
3	65.00	67.00	4"	62.84	67.60	67.00	66.00	66.30	0.4"
4	61.00	64.00	4"	58.84	64.60	64.00	63.00	63.30	0.9"
5	61.00	63.00	6"	58.84	63.70	63.00	62.00	62.30	0.6"

CONSTRUCTION OVERSIGHT NOTES:

AS A CONDITION OF THE SITE LOCATION OF DEVELOPMENT DEPARTMENT ORDER, THE OWNER IS REQUIRED TO RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO OVERSEE THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER IS REQUIRED TO NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE BMP'S HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS, OR ANY DEPARTMENT APPROVED CHANGES TO THE PLANS. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA FOR THE SOIL, GRAVEL OR FILTER MEDIA COMPONENTS SPECIFIED IN THE PLANS AND USED IN THE CONSTRUCTION OF THE SYSTEMS.

UNDERDRAINED SOIL FILTERS:
CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
COMPACTION OF SOIL FILTER: FILTER SOIL MEDIA AND UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA.
CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
- AFTER THE PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED,
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA,
- AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED. BIO–RETENTION CELLS MUST BE STABILIZED PER THE PROVIDED PLANTING SCHEME AND DENSITY FOR THE CANOPY COVERAGE OF 30 AND 50%.
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS, AND
- ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
- SUBMIT SAMPLES OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
- PERFORM A SIEVE ANALYSIS CONFORMING TO STM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
- PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90–92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.

GRAVEL WETLANDS:
CONSTRUCTION SEQUENCE: THE WETLAND SOIL AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE SYSTEM HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
- AFTER THE EXCAVATION OF THE TREATMENT CELLS AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED,
- AFTER THE CRUSHED STONE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE WETLAND SOIL,
- AFTER THE WETLAND SOIL HAS BEEN INSTALLED AND SEEDED
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS, AND
- ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE WETLAND SYSTEM MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE WETLAND SOIL, PEA GRAVEL AND CRUSHED STONE LAYERS. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION.

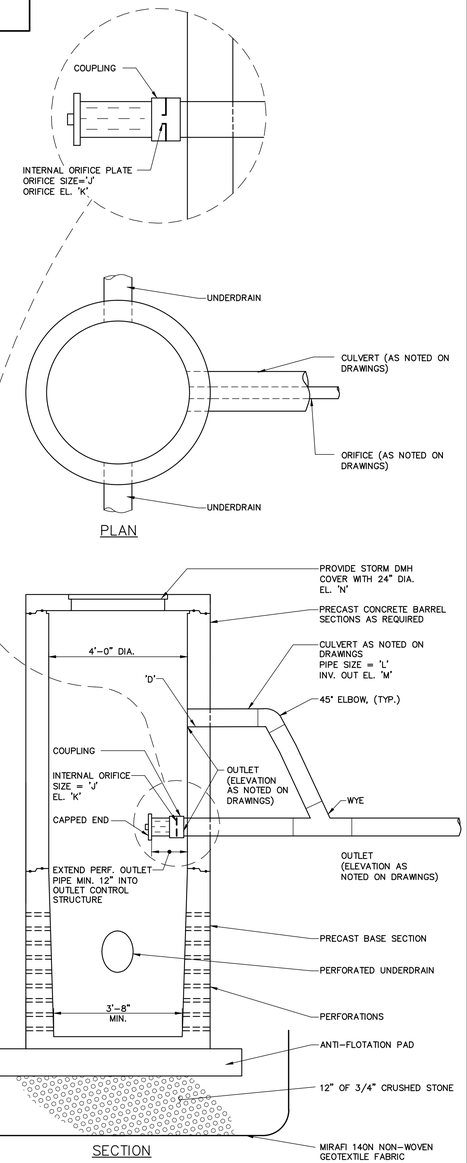
ROADWAY AND SITE GRADING: INSPECTIONS A PROFESSIONAL ENGINEER WILL CONSIST OF A VISIT TO THE SITE PRIOR TO CONSTRUCTION TO CONSULT WITH THE EARTHWORK CONTRACTOR AND A POST CONSTRUCTION MEETING TO CONFIRM GRADING OF THE ROADWAY AND SITE AREAS TO ENSURE RUNOFF IS DIRECTED ACCORDING TO PLANS AND TO OVERSEE THE RE–STABILIZATION OF THE LOT INTO A VEGETATED COVER.

STONE BERMED LEVEL LIP SPREADER: A LEVEL SPREADER MUST BE INSTALLED CORRECTLY WITH 0% GRADE ON THE SPREADER BASE AND LIP TO ENSURE A UNIFORM DISTRIBUTION OF FLOW. INSPECTIONS SHALL BE PERFORMED BY A PROFESSIONAL ENGINEER AND SHALL CONSIST OF VISITS TO THE SITE TO INSPECT THE FINISHED CONSTRUCTION OF EACH LEVEL SPREADER TO ENSURE THE STONE MATERIAL AND PLACEMENT MEETS THE DESIGN REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.

DEWATERING:
A DEWATERING PLAN SHALL BE DEVELOPED BY THE CONTRACTOR IN ACCORDANCE WITH PLAN NOTES, DETAILS AND CONTRACT SPECIFICATIONS TO ADDRESS EXCAVATION DE–WATERING FOLLOWING HEAVY RAINFALL EVENTS OR WHERE THE EXCAVATION MAY INTERCEPT THE GROUNDWATER TABLE DURING CONSTRUCTION. THE DEWATERING PLAN SHOULD ADDRESS TREATMENT AND IDENTIFY DISCHARGE POINTS THAT WILL NOT CAUSE DOWNGRADIENT EROSION AND OFFSITE SEDIMENTATION OR WITHIN A RESOURCE.

BASIC STANDARDS – EROSION CONTROL MEASURES:
MINIMUM EROSION CONTROL MEASURES WILL NEED TO BE IMPLEMENTED AND THE APPLICANT WILL BE RESPONSIBLE TO MAINTAIN ALL COMPONENTS OF THE EROSION CONTROL PLAN UNTIL THE SITE IS FULLY STABILIZED. HOWEVER, BASED ON SITE AND WEATHER CONDITIONS DURING CONSTRUCTION, ADDITIONAL EROSION CONTROL MEASURES MAY NEED TO BE IMPLEMENTED. ALL AREAS OF INSTABILITY AND EROSION MUST BE REPAIRED IMMEDIATELY DURING CONSTRUCTION AND NEED TO BE MAINTAINED UNTIL THE SITE IS FULLY STABILIZED OR VEGETATION IS ESTABLISHED. A CONSTRUCTION LOG MUST BE MAINTAINED BY THE RESIDENT INSPECTOR FOR THE EROSION AND SEDIMENTATION CONTROL INSPECTIONS AND MAINTENANCE

THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES AS PUBLISHED IN 1991 BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION HAS BEEN CHANGED TO THE "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE MAINE DEP IN 2003. ALL REFERENCES SHOULD BE CHANGED TO THE NEW MANUAL.
HTTP://WWW.MAINE.GOV/DEP/BLWQ/DOCSTAND/ESCBMPS/INDEX.HTM



OUTLET CONTROL STRUCTURE
N.T.S.

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DAVID A. SENUS — STATE OF MAINE — REGISTERED PROFESSIONAL ENGINEER — 11/20/2015

REV'D	DESCRIPTION	DATE
1	MAINE DEP COMMENTS	11/03/2015
DESIGNED BY: AEA/JLS	CHECKED BY: DAS	22800-C-11.dwg
DRAWN BY: JRC		

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ECONOMIC DEVELOPMENT OFFICE
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& PATRONS OXFORD INSURANCE CO.

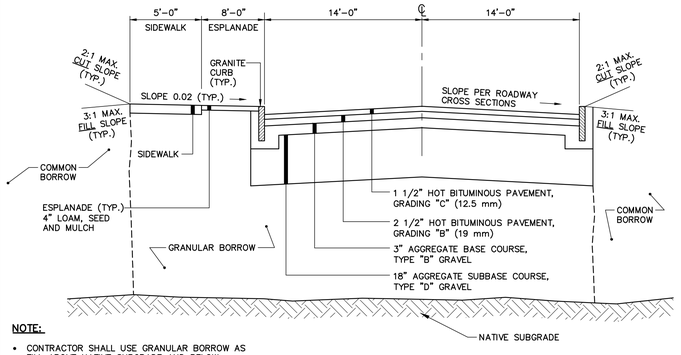
PORTLAND TECHNOLOGY PARK UPDATE
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CIVIL DETAILS 1

JOB NO.:	229001.01
DATE:	NOVEMBER 2015
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SHEET:	12 OF 18

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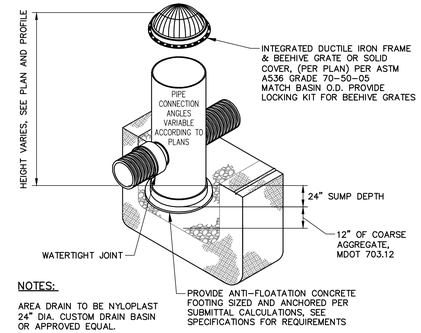


NOTE:

- CONTRACTOR SHALL USE GRANULAR BORROW AS FILL ABOVE NATIVE SUBGRADE AND BELOW ROADWAY AND SIDEWALK GRAVEL. CONTRACTOR SHALL USE COMMON BORROW AS FILL IN ALL SHOULDER INSLOPES, BEYOND LIMITS OF ROADWAY AND SIDEWALK PAVEMENT AREAS.

ROADWAY CROSS SECTION

N.T.S.

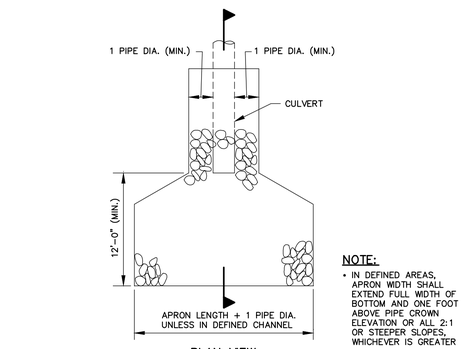


NOTES:

AREA DRAIN TO BE NYLOPLAST 24" DIA. CUSTOM DRAIN BASIN OR APPROVED EQUAL.

2' DIA. AREA DRAIN

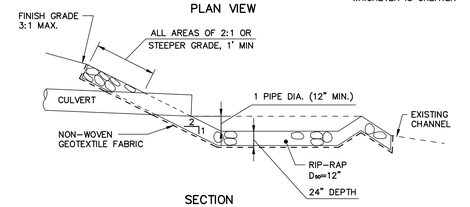
N.T.S.



PLAN VIEW

NOTE:

- IN DEFINED AREAS, APRON WIDTH SHALL EXTEND FULL WIDTH OF BOTTOM AND ONE FOOT ABOVE PIPE CROWN ELEVATION OR ALL 2:1 OR STEEPER SLOPES, WHICHEVER IS GREATER



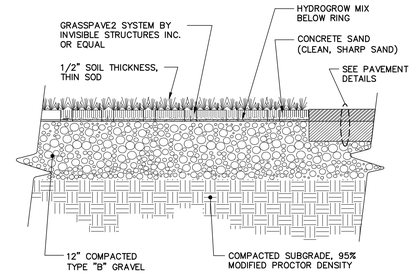
SECTION

RIP-RAP OUTLET PROTECTION APRON DETAIL

N.T.S.

GRASSPAVE2 NOTES:

1. HYDROGROW MIX SHALL BE A MIXTURE MADE FROM SEVERAL COMMERCIAL PRODUCTS INCLUDING: 1) CROSS-LINKED POLYACRYLIMIDE (<0.1%) POLYMER, WHICH IS NON-TOXIC AND NEUTRAL IN PH, AND WILL ABSORB 150 TO 350 TIMES ITS WEIGHT IN WATER FROM MOST TAP SOURCES; 2) ZEOPRO ZEOLITE MINERAL, AMENDED WITH SMALL AMOUNTS OF STARTER FERTILIZERS, FROM ZEOPONIX, INC.; 3) ISOLITE POROUS CERAMIC, DESIGNED TO HOLD LARGE AMOUNTS OF WATER WITHOUT PHYSICAL DEGRADATION OR CHANGE OF SIZE OF PARTICLE, FROM SUMITOMO GROUP; 4) AND AGGROMOLATED HUMATE, A NATURAL SOURCE OF NUTRIENTS AND MICRONUTRIENTS, FROM TRI-C ENTERPRISES. MIX SHALL BE PLACED IMMEDIATELY PRIOR TO INSTALLING GRASSPAVE UNITS. ASSURE POLYMER DOES NOT BECOME WET AND EXPANDED WHEN INSTALLING UNITS.
2. HYDROGROW MIX SHALL BE SPREAD AT RATE EQUIVALENT TO 5 LBS PER 1000 SQUARE FEET.
3. INSTALL THE GRASSPAVE2 UNITS BY PLACING UNITS WITH RINGS FACING UP, AND USING PEGS AND HOLES PROVIDED TO MAINTAIN PROPER SPACING AND INTERLOCK THE UNITS. UNITS CAN BE EASILY SHAPED WITH PRUNING SHEARS OR KNIFE. UNITS PLACED ON CURVES AND SLOPES SHALL BE ANCHORED TO THE BASE COURSE, USING 16D COMMON NAILS WITH FENDER WASHER, AS REQUIRED TO SECURE UNITS IN PLACE. TOPS OF RINGS SHALL BE BETWEEN 6 MM TO 13 MM (0.25" TO 0.5") BELOW THE SURFACE OF ADJACENT HARD-SURFACE PAVEMENTS.
4. INSTALL SAND IN RINGS AS THEY ARE LAID IN SECTIONS BY "BACKDUMPING" DIRECTLY FROM A DUMP TRUCK, OR FROM BUCKETS MOUNTED ON TRACTORS, WHICH THEN EXIT THE SITE BY DRIVING OVER RINGS ALREADY FILLED WITH SAND. THE SAND IS THEN SPREAD LATERALLY FROM THE PILE USING FLAT BOTTOMED SHOVELS AND/OR WIDE "ASPHALT RAKES" TO FILL THE RINGS. A STIFF BRISTLED BROOM SHOULD BE USED FOR FINAL "FINISHING" OF THE SAND. THE SAND MUST BE "COMPACTED" BY USING WATER FROM HOSE, IRRIGATION HEADS, OR RAINFALL, WITH THE FINISH GRADE NO LESS THAN THE TOP OF RINGS AND NO MORE THAN 6 MM (0.25") ABOVE TOP OF RINGS.
5. INSTALL GRASS SEED AND MULCH OVER SAND-FILLED RING BY HYDROSEEDING METHOD.

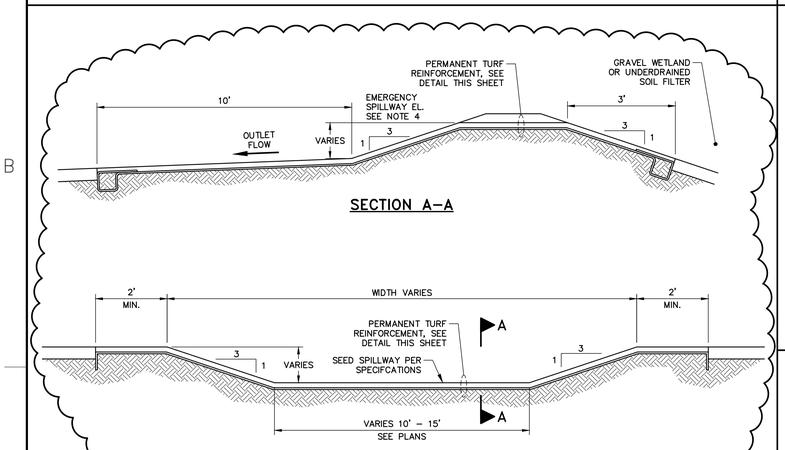


NOTE:

DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL

GRASSPAVE2 INSTALLATION DETAIL

N.T.S.



SECTION A-A

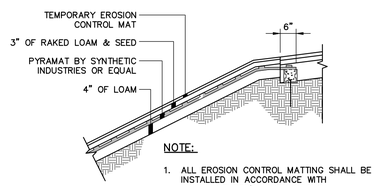
EMERGENCY SPILLWAY SECTION

NOTES:

1. CONSTRUCTION OF NON-CONDUCTIVE SOILS/CLAY.
2. EROSION CONTROL MESH WHERE SPECIFIED ON PLANS.
3. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL NOTES.
4. FOR SPILLWAY ELEVATION SEE GRAVEL WETLAND SCHEDULE AND UNDERDRAINED SOIL FILTER SCHEDULE ON SHEET C-11.

EMERGENCY SPILLWAY DETAIL

N.T.S.



NOTE:

1. ALL EROSION CONTROL MATTING SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

PERMANENT TURF REINFORCING DETAIL

N.T.S.

DEWATERING NOTES

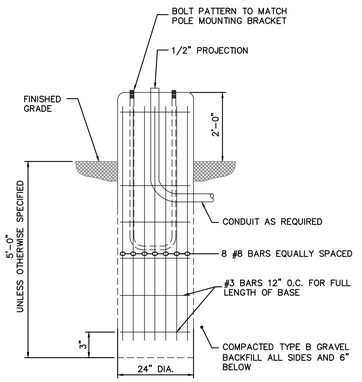
1. LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
2. DISCHARGE NOT PERMITTED WITHIN 25' OF A STREAM OR WETLAND. CONSULT DEP IF STRUCTURE MUST BE WITHIN 75' OF STREAM OR WATER BODY. SECONDARY CONTAINMENT MAY BE REQUIRED.
3. DOWNGRADIENT RECEIVING AREA MUST BE WELL VEGETATED OR OTHERWISE STABLE FROM EROSION, I.E. FOREST FLOOR OR COARSE GRAVEL/STONE.
4. NEVER DISCHARGE TO AREAS THAT ARE BARE OR NEWLY VEGETATED.
5. DIRT BAG MATERIAL BASED ON PARTICLE SIZE IN DIRTY WATER, I.E., FOR COARSE PARTICLES A WOVEN MATERIAL; FOR SILTS/CLAYS A NON-WOVEN MATERIAL.
6. DO NOT OVER PRESSURIZE DIRT BAG OR USE BEYOND CAPACITY.
7. CHANNELS DUG FOR DISCHARGING WATER FROM THE EXCAVATED AREA NEED TO BE STABLE. IF FLOW VELOCITIES CAUSE EROSION WITHIN THE CHANNEL THEN A DITCH LINING SHOULD BE USED.
8. BUCKETED WATER SHOULD BE DISCHARGED IN A STABLE MANNER TO THE SEDIMENT REMOVAL AREA. A SPLASH PAD OF RIPRAP UNDERLAIN WITH GEOTEXTILE MAY BE NECESSARY TO PREVENT SCOURING OF SOIL.
9. DEWATERING IN PERIODS OF INTENSE, HEAVY RAIN, WHEN THE INFILTRATIVE CAPACITY OF THE SOIL IS EXCEEDED, SHOULD BE AVOIDED.
10. INSTALL DIVERSION DITCHES OR BERMS TO MINIMIZE THE AMOUNT OF CLEAN STORMWATER RUNOFF ALLOWED INTO THE EXCAVATED AREA.
11. DURING THE ACTIVE DEWATERING PROCESS, INSPECTION OF THE DEWATERING FACILITY SHOULD BE REVIEWED FREQUENTLY. SPECIAL ATTENTION SHOULD BE PAID TO THE BUFFER AREA FOR ANY SIGN OF EROSION AND CONCENTRATION OF FLOW THAT MAY COMPROMISE THE BUFFER AREA. OBSERVE WHERE POSSIBLE THE VISUAL QUALITY OF THE EFFLUENT AND DETERMINE IF ADDITIONAL TREATMENT CAN BE PROVIDED.

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C-478.
4. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVED EQUAL.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C-32-63, GRADE MA AND SA.
8. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
9. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48-CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
12. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A CASCO TRAP.

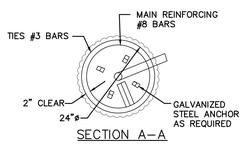
NOTE:

DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL



LIGHT POLE BASE DETAIL

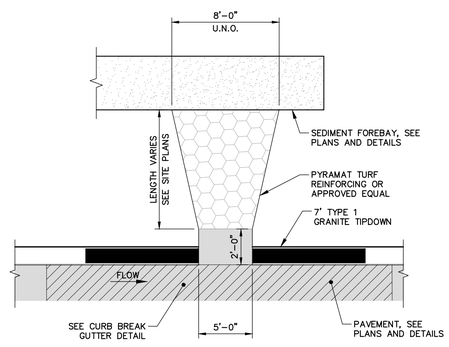
N.T.S.



SECTION A-A

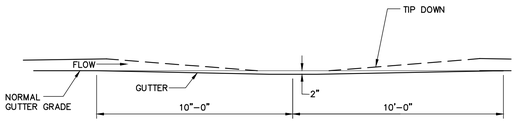
NOTE:

POLE AND FIXTURE SHALL BE HOLOPHANE LEDgend ROADWAY LED WITH ROUND TAPERED ALUMINUM POLE 25FT, 8.0 x 4.5 x .156 WALL: 1209-1 MOUNTING ARM, BLACK



STABILIZED TURNOUT DETAIL

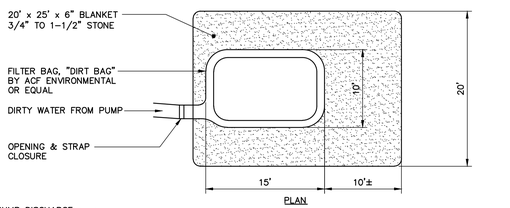
N.T.S.



SECTION VIEW

CURB BREAK GUTTER DETAIL

N.T.S.

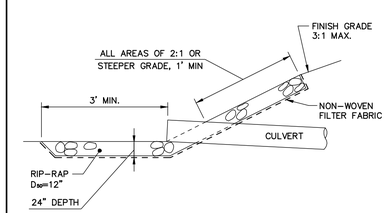


PLAN

SECTION

DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE

N.T.S.



RIP-RAP INLET PROTECTION DETAIL

N.T.S.

PERMITTING SET - NOT FOR CONSTRUCTION

41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

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WOODARD & CURRAN

DAVID A. SENUS 10791 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER

11/20/2015

REV	DESCRIPTION	DATE
1	MAINE DEP COMMENTS	11/03/2015

DESIGNED BY: AEA/JLS
DRAWN BY: JRC
CHECKED BY: DAS
22900I-C-12.dwg

CIVIL DETAILS 2

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LOT 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: AS NOTED
SHEET: 13 OF 18

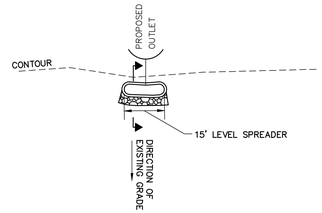
C-12

24x36 SHEET
1:1

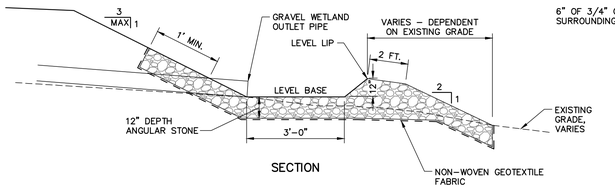
LEVEL SPREADER STONE SIZE*

Sieve Designation (metric)	Sieve Designation (U.S. Customary)	Percent by Weight Passing Square Mesh Sieve
300 mm	12 inch	100
150 mm	6 inch	84–100
75 mm	3 inch	68–83
25.4 mm	1 inch	42–55
4.75 mm	No. 4	8–12

*ALL STONE SHALL BE CRUSHED, ANGULAR STONE



PLAN VIEW

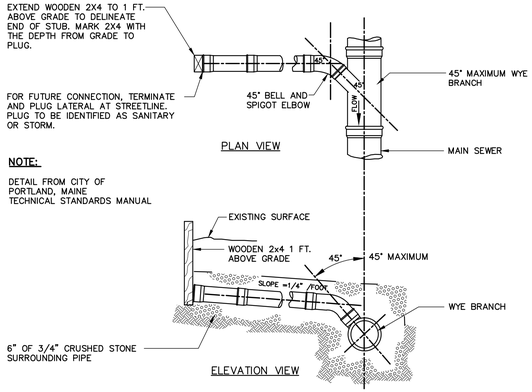


SECTION

LEVEL LIP SPREADER DETAIL

N.T.S.

NOTE:
LOCATION / WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.



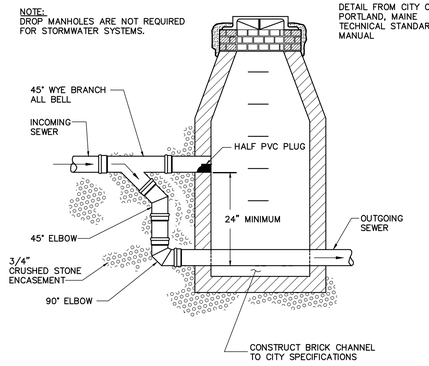
NOTE:
DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL

TYPICAL LATERAL TEE/WYE CONNECTION

N.T.S.

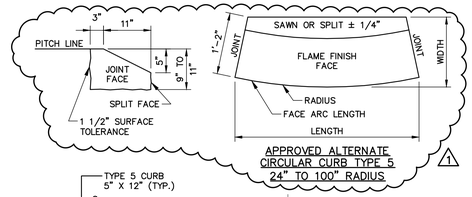
NOTE:
DROP MANHOLES ARE NOT REQUIRED FOR STORMWATER SYSTEMS.

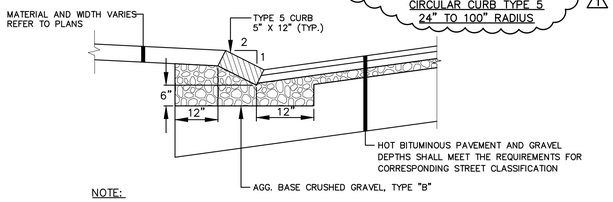
NOTE:
DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL



TYPICAL OUTSIDE DROP MANHOLE

N.T.S.

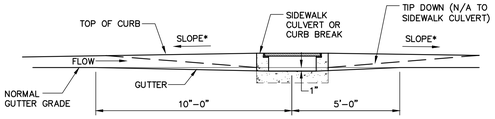




NOTE:
1. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED.
2. FOR RADIAL CURB USE MDOT APPROVED ALTERNATE CIRCULAR CURB TYPE 5. 1

SLOPED GRANITE CURB DETAIL

N.T.S.

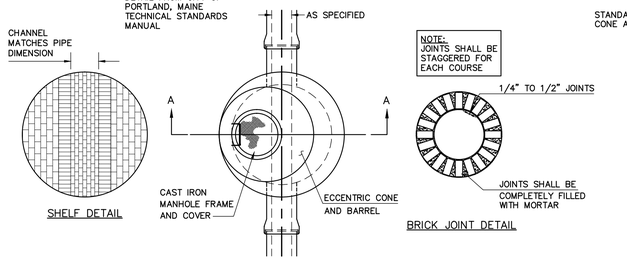


* TOP OF CURB AND SIDEWALK SLOPED TO MATCH TOP OF SIDEWALK CULVERT GRADE. N/A FOR CURB BREAKS AT STABILIZED TURNOUTS.

CULVERT/ CURB BREAK GUTTER DETAIL

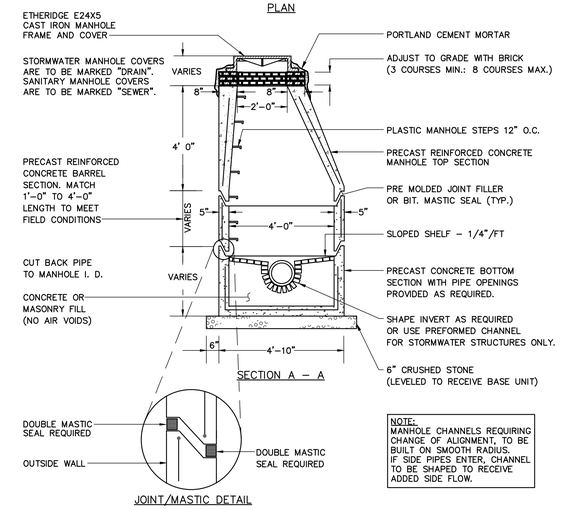
N.T.S.

NOTE:
DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL



NOTE:
JOINTS SHALL BE STAGGERED FOR EACH COURSE

BRICK JOINT DETAIL

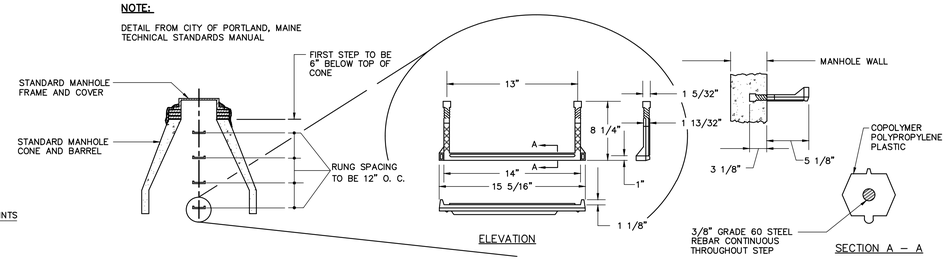


NOTE:
MANHOLE CHANNELS REQUIRING CHANGE OF ALIGNMENT, TO BE BUILT ON SMOOTH RADIUS. IF SIDE PIPES ENTER, CHANNEL TO BE SHAPED TO RECEIVE ADDED SIDE FLOW.

PRECAST CONCRETE MANHOLE

N.T.S.

NOTE:
DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL

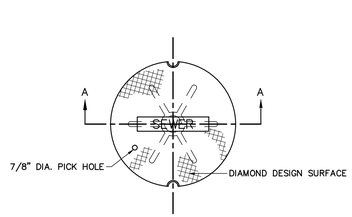


PLASTIC MANHOLE STEPS

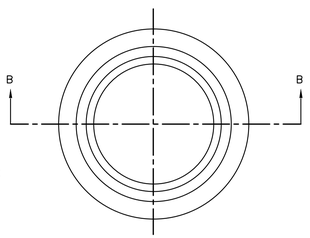
N.T.S.

NOTE:
ALL MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE, LOCATED 8" FROM THE CENTER OF THE COVER.

ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.

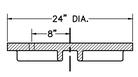


COVER
PLAN VIEW

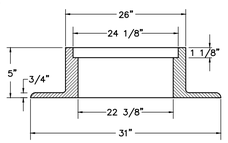


FRAME
PLAN VIEW

NOTE:
DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL



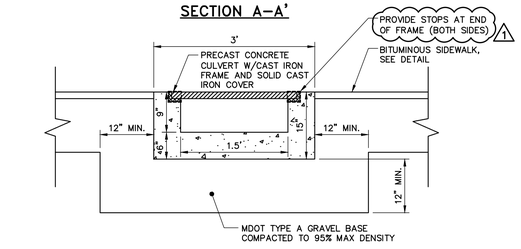
SECTION A – A
COVER



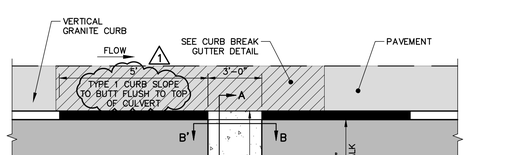
MIN. WGT. 320 LBS.
SECTION B – B
FRAME

CAST IRON MANHOLE COVER AND FRAME

N.T.S.



SECTION A–A'



SECTION B–B'

NOTE:
1. SIDEWALK CULVERT AND COVER SHALL BE DESIGNED AND MANUFACTURED TO ACHIEVE AN AASHTO H–20 LOAD RATING.
2. ALL PRODUCTS SHALL BE MANUFACTURED IN THE UNITED STATES.
3. SIDEWALK CULVERTS BY GEORGE R. ROBERTS COMPANY OR APPROVED EQUAL.

PLAN

SIDEWALK CULVERT DETAIL

N.T.S.

PERMITTING SET - NOT FOR CONSTRUCTION

WOODARD & CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

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DAVID A. SENUS 10791 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER
11/20/2015

REV	DESCRIPTION	DATE
1	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15

DESIGNED BY: AEA/JLS
DRAWN BY: JBC
CHECKED BY: DAS
22901-C-13.dwg

CIVIL DETAILS 3

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

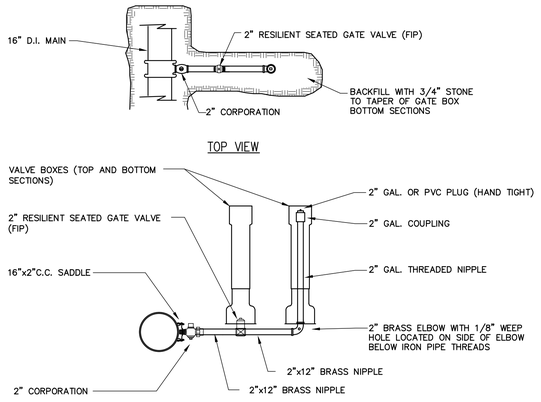
PORTLAND TECHNOLOGY PARK, UPDATE & LOT 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: AS NOTED
SHEET: 14 OF 18

C-13

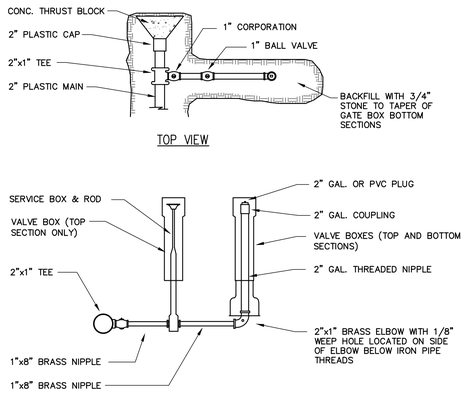
24x36 SHEET
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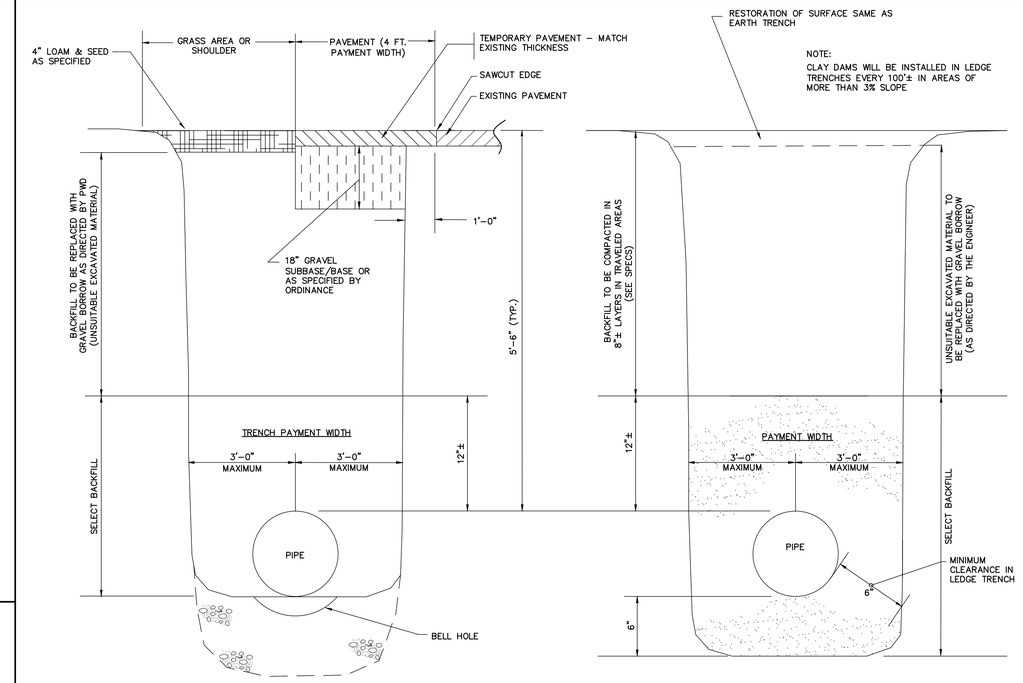
SIDE-ARM BLOW-OFF 4" & LARGER MAINS

N.T.S.



SIDE-ARM BLOW-OFF 2" MAIN

N.T.S.

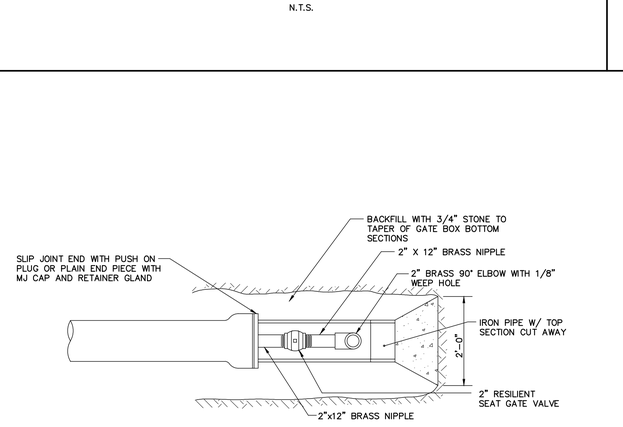


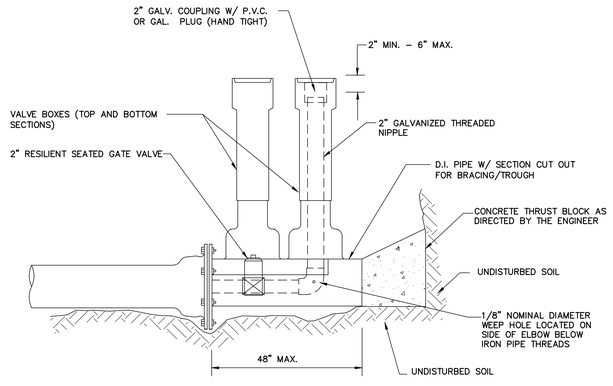
SECTION THRU EARTH TRENCH

N.T.S.

SECTION THRU LEDGE TRENCH

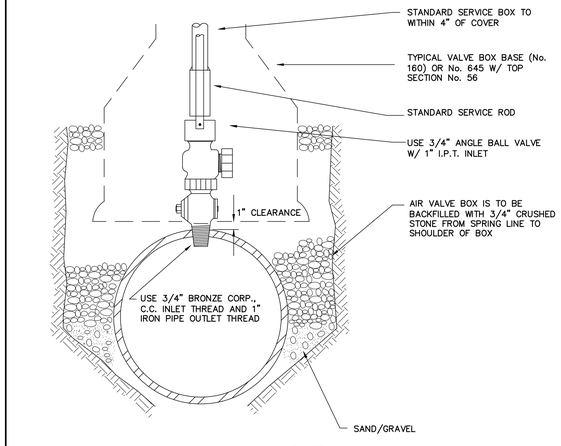
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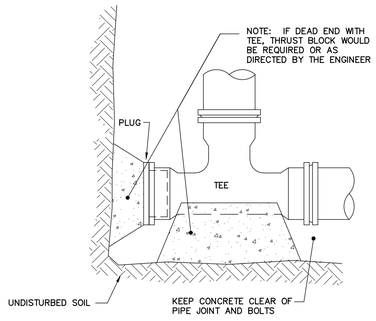
STANDARD 2" BLOW OFF

N.T.S.



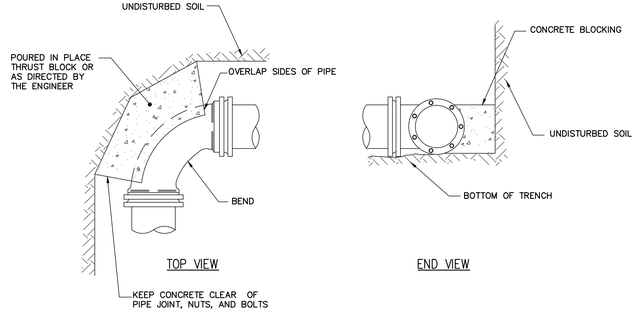
TYPICAL AIR VALVE (1")

N.T.S.



STANDARD TEE BLOCKING

N.T.S.



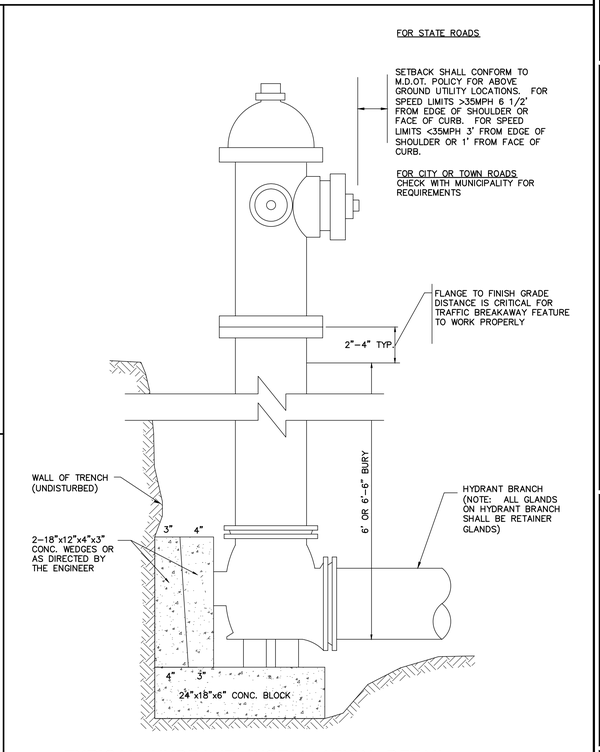
STANDARD BEND BLOCKING

N.T.S.

NOTE:

WATER DETAILS FROM PORTLAND WATER DISTRICT ASSET MANAGEMENT & PLANNING DEPT. "STANDARD WATER DETAILS WATER MAIN REPLACEMENTS PORTLAND – SOUTH PORTLAND"

FOR STATE ROADS



TYPICAL HYDRANT INSTALLATION DETAIL

N.T.S.

PERMITTING SET - NOT FOR CONSTRUCTION

WOODARD & CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
PROJECT NO.:
COMMITMENT & INTEGRITY DRIVE RESULTS

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STATE OF MAINE
DAVID A. SENUS
LICENSED PROFESSIONAL ENGINEER
11/20/2015

REV	DESCRIPTION	DATE

DESIGNED BY: AEA/JLS
DRAWN BY: JBC
CHECKED BY: DAS
229001-C-14.dwg

CIVIL DETAILS 4

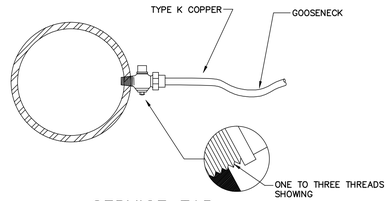
CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE & LOT 4 DEVELOPMENT

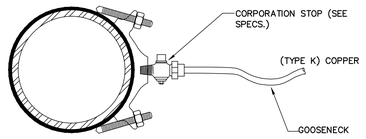
JOB NO.: 229001.01
DATE: NOVEMBER 2015
SCALE: AS NOTED
SHEET: 15 OF 18

C-14

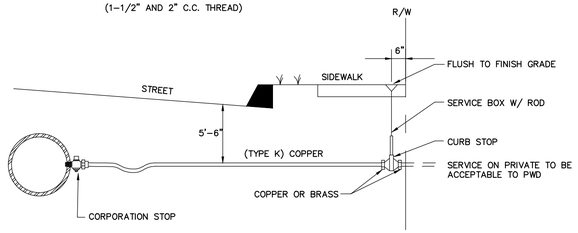
\\Woodardcurran.net\shared\Projects\229001 SSA – PTP Lot 1 Development\wip\Drawings\CIVIL\229001-C-14.dwg, Nov 23, 2015 – 8:01am



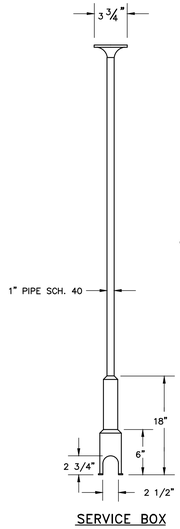
SERVICE TAP
(3/4" AND 1" C.C. THREAD)



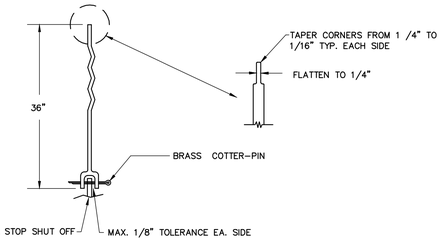
SERVICE SADDLE
(1-1/2" AND 2" C.C. THREAD)



TYPICAL SERVICE CONNECTION
N.T.S.



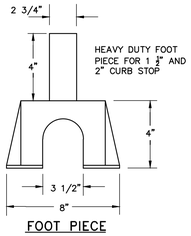
SERVICE BOX



SERVICE ROD



COVER

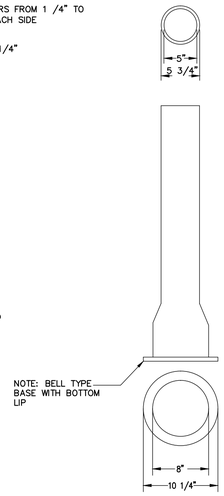


FOOT PIECE

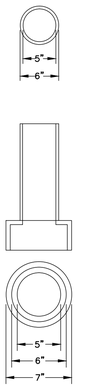
NOTE : ANY EXTENSION OF SERVICE BOX REQUIRES:

1.) 1" FEMALE IRON PIPE COUPLING 2) 1" THREADED PIPE (THIS IS TO BE A NON-WELDED,

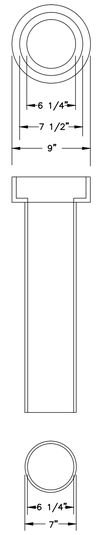
TWO PIECE ARRANGEMENT. SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)



BASE SECTION NO. 645

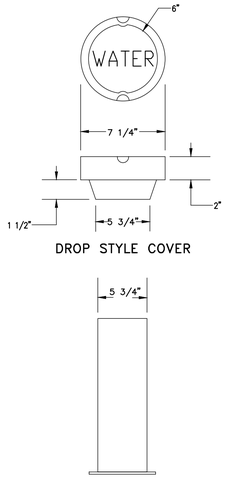


INTERMEDIATE SECTION NO. 58



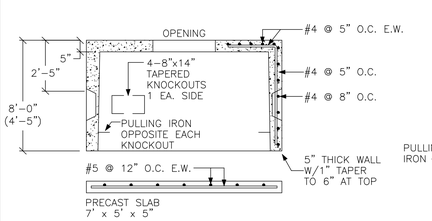
TOP SECTION NO. 56

(NUMBERS ARE FOR 5 1/4" BUFFALO VALVE BOXES) (BASE SECTION MAY BE USED AS INTERMEDIATE SECTION)

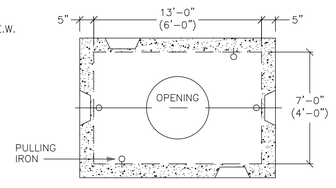


DROP STYLE COVER

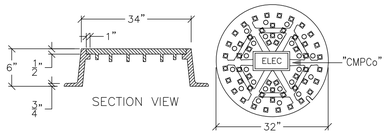
VALVE BOX & COVER
N.T.S.



SECTION VIEW



PLAN VIEW



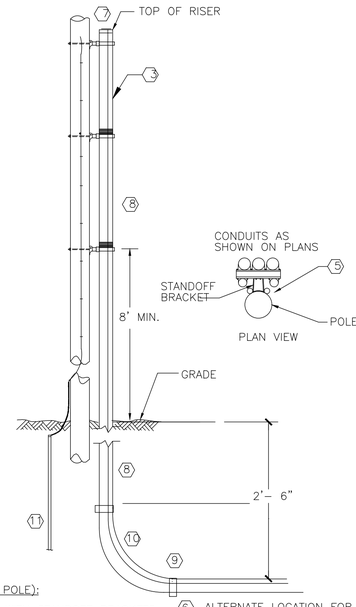
SECTION VIEW

COVER

NOTES (TYPICAL FOR ELEC MANHOLES):

1. CONCRETE: 4,000 PSI @ 28 DAYS.
2. USE 32" COVER AND FRAME MARKED CMPCo. MINIMUM ONE COURSE BRICK TO GRADE.
3. MOUNTINGS FOR CABLE RACKS ETC. CAST IN WALL BY FURTHER PLANS OR FIELD LOCATED.
4. MANHOLE SHALL BE SET ON A MIN. 12" OF ¾" CRUSHED STONE.
5. REINFORCING: GRADE 60 REBAR:
   - REINFORCEMENT PLACED IN CENTER OF CONCRETE SLAB, WALLS, & ROOF.
   - #4 @ 5" O.C. VERTICALLY IN WALLS, CANTILEVERED OVER TOP OF OPENING.
   - #4 @ 8" O.C. HORIZONTALLY IN WALLS.
   - 4 PIECES #4 SURROUNDING OPENING.
   - #4 @ 5" O.C. EACH WAY ON TOP.
6. VAULT SHALL BE DESIGNED TO WITHSTAND H20 WHEEL LOADING WITH 6 INCHES OF OVERBURDEN. THE DESIGN SHALL ALSO COMPLY WITH THE STRENGTH REQUIREMENTS OF NATIONAL ELECTRICAL SAFETY CODE SECTION 323A. PROVIDE SHOP DRAWINGS STAMPED BY A STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER.
7. MANHOLE FRAMES AND COVERS ARE TO BE MACHINED TO A SMOOTH FIT AND SHALL BE OF GRAY CAST IRON.
8. COVER SHALL HAVE DIAMOND TOP SURFACE.
9. JOINTS SHALL BE SEALED WITH ASPHALT
10. CABLES SHALL BE RACKED ALONG ONE WALL ONLY
11. CONDUITS ENTERING CONCRETE STRUCTURES SHALL BE SET BACK FROM THE INSIDE WALL 1 TO 2 INCHES AND THE SPACE WITHIN THE KNOCKOUT SURROUNDING THE CONDUITS COMPLETELY FILLED WITH MORTAR TO PREVENT SOIL OR GROUNDWATER FROM ENTERING STRUCTURE. INSIDE THE STRUCTURE THE MORTAR SHALL BE FINISHED AND BEVELED FROM THE CONDUIT ENDS TO THE INSIDE WALL FACE TO COVER AND SMOOTH THE EDGES OF THE KNOCKOUT.

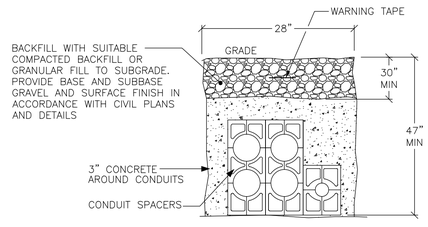
ELECTRICAL MANHOLE DETAIL
N.T.S.



NOTES (TYPICAL FOR RISER POLE):

1. CONDUIT SECTION USED WITH STANDOFF BRACKETS SHALL BE METAL CONDUIT ONLY.
2. TOP CONDUIT SECTIONS LONGER THAN 24" MUST BE SUPPORTED.
3. LOWEST BRACKET SHALL BE MINIMUM OF 8 FEET ABOVE FINISHED GRADE.
4. ONE BRACKET SHALL BE USED TO SUPPORT EACH 10-FOOT SECTION OF CONDUIT WITH THE BRACKET
5. COMMUNICATION CABLE MAY BE ATTACHED DIRECTLY TO POLE ADJACENT TO BRACKETS.
6. ALTERNATE LOCATION FOR COMMUNICATION CABLE IF RUN IN METAL CONDUIT.
7. SEAL TOP OF CONDUIT WITH POLYURETHANE SEALER. TOP OF CONDUIT SHALL HAVE A DOUBLE NON-THREADED PLASTIC COUPLING. TOP OF CONDUIT SHALL EXTEND 4" ABOVE PRIMARY NEUTRAL.
8. RIGID STEEL GALVANIZED CONDUIT.
9. PVC TO STEEL CONDUIT COUPLING.
10. LONG RADIUS SWEEP RIGID CONDUIT ELBOW.
11. 3/4" DIA BY 10 FT. LONG COPPER CLAD GROUND ROD AND GROUND CABLE

TYPICAL RISER POLE DETAIL
N.T.S.



SIZE & NUMBER OF CONDUIT TO BE DETERMINED WITH UTILITIES.

UTILITY COMPANY SERVICE DUCT SECTIONS
N.T.S.

APPLICABLE TO ALL CONDUITS UNDER STREETS AND SIDEWALKS.

ALL CONDUITS, INCLUDING RISER CONDUITS, NEED TO BE SLOPED TO DRAIN INTO MANHOLES OR TRANSFORMER FOUNDATIONS, 3" PER 100'.

INSTALL PULLING LINE IN EACH CONDUIT

CONDUIT SHALL BE SCHEDULE 40 PVC, CONDUIT SWEEPS SHALL BE MIN. 48" RADIUS RIGID GALV. STEEL

PERMITTING SET - NOT FOR CONSTRUCTION

WOODARD & CURRAN
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

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DAVID A. SENUS 10751 STATE OF MAINE REGISTERED PROFESSIONAL ENGINEER

11/20/2015

REV	DESCRIPTION	DATE
DESIGNED BY: AEA/JLJS	CHECKED BY: DAS	22901-C-15.dwg
DRAWN BY: JBC		

CIVIL DETAILS 5

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

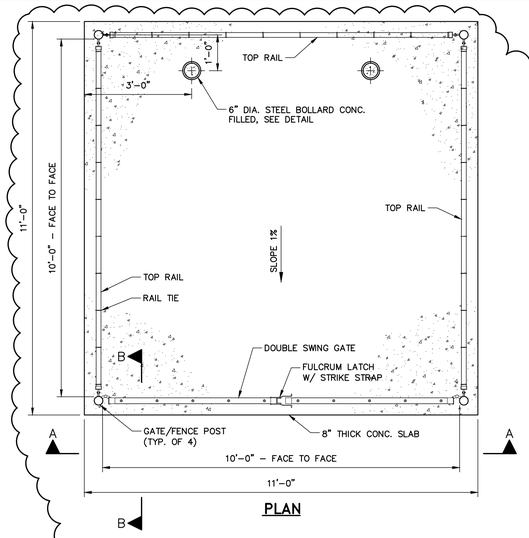
PORTLAND TECHNOLOGY PARK UPDATE
& LOT 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: AS NOTED
SHEET: 16 OF 18

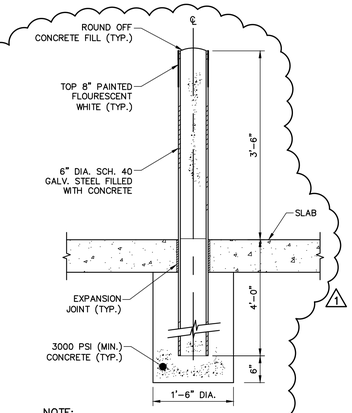
C-15

24x36 SHEET
1:1

\\Woodardcurran.net\shared\Projects\22900T SSA - PTP Lot 1 Development\wip\Drawings\CIVIL\229001-C-15.dwg, Nov 23, 2015 - 8:01am



PLAN

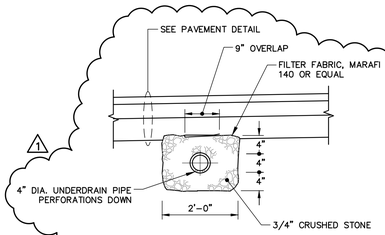


NOTE:

ALL BOLLARDS SHALL BE PAINTED. COLOR SELECTED BY OWNER.

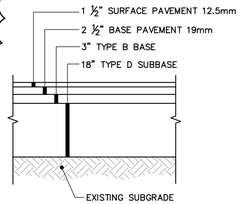
BOLLARD DETAIL

N.T.S.



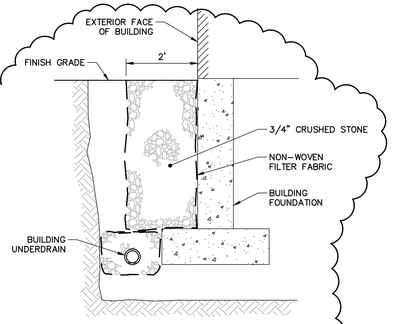
UNDERDRAIN DETAIL

N.T.S.



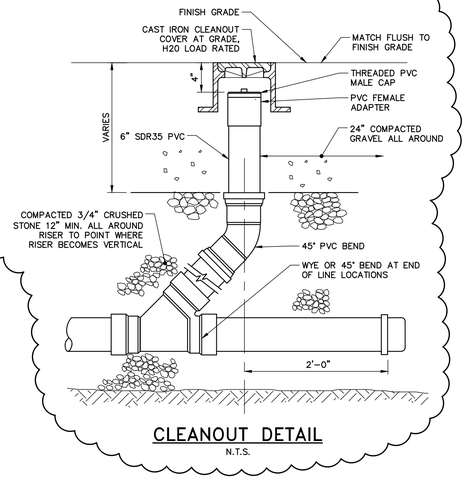
DRIVEWAY AND PARKING LOT PAVEMENT DETAIL

N.T.S.



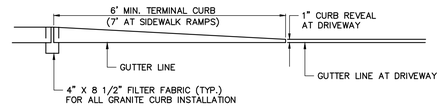
CRUSHED STONE EDGE DETAIL

N.T.S.

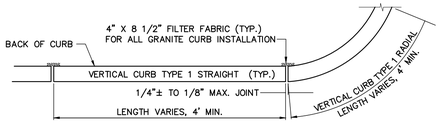


CLEANOUT DETAIL

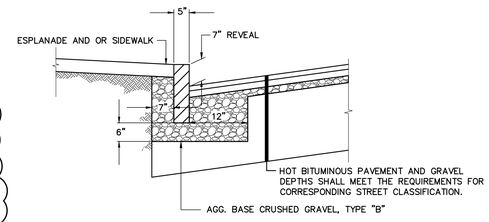
N.T.S.



TERMINAL CURB PROFILE



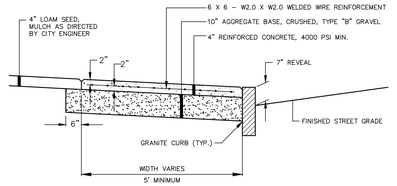
VERTICAL GRANITE CURB PLAN VIEW



VERTICAL GRANITE CURB CROSS SECTION

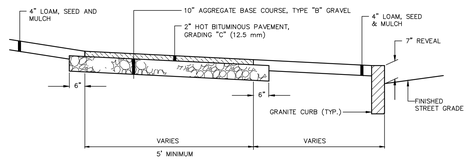
VERTICAL GRANITE CURB FULL DEPTH STREET CONSTRUCTION

N.T.S.



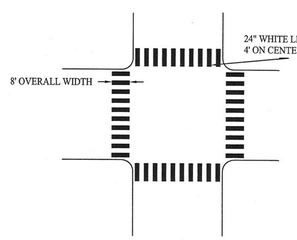
REINFORCED CONCRETE SIDEWALK

N.T.S.



BITUMINOUS SIDEWALK

N.T.S.



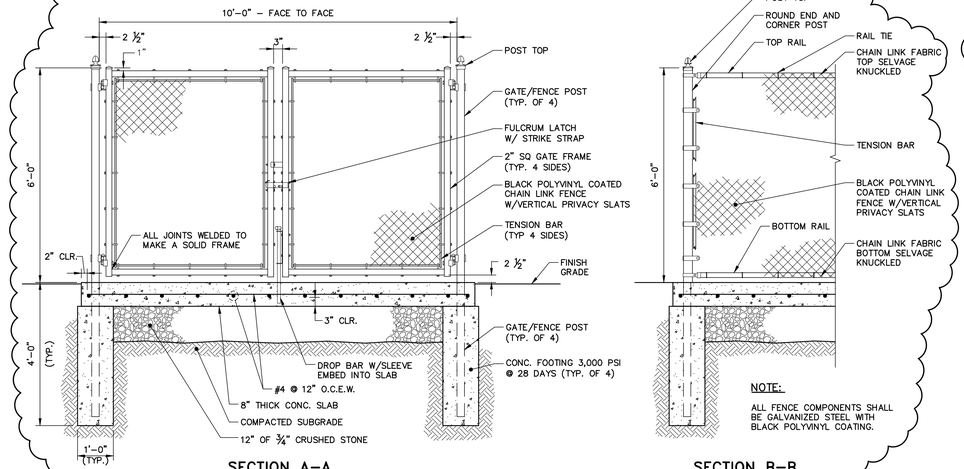
CROSSWALK WITH LONGITUDINAL LINES (BLOCKS)
POSTED SPEED ≤ 45 mph

NOTE:

DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL

TYPICAL CROSSWALK MARKINGS

N.T.S.



SECTION A-A

NOTE:

ALL FENCE COMPONENTS SHALL BE GALVANIZED STEEL WITH BLACK POLYVINYL COATING.

SECTION B-B

DUMPSTER PAD DETAIL

SCALE: 1/2" = 1'-0"

Tools Needed for Installation

Tape Measure
Marker or Pencil
Masonry Drill Bit
Drill (Hammer drill recommended)
Hammer
Wrench 9/16"
Level
Washers (for leveling if necessary)

Recommended Base Materials:

Solid concrete is the best base material for installation. Ask your Dero Rack representative which anchor is appropriate for your application to ensure the proper anchors are shipped with your rack. Be sure nothing is underneath the base material that could be damaged by drilling.

Installation:

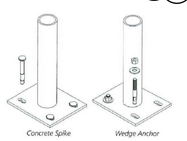
3/8" anchors are shipped with the rack. Place the rack in the desired location. Use a marker or pencil to outline the holes of the flange onto the base material. Drill the holes in accordance with the specifications shipped with the anchors. Make sure the holes are at least 6" away from any cracks in the base material.

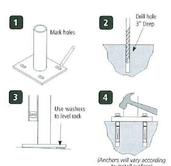
Tamper Resistant Fasteners

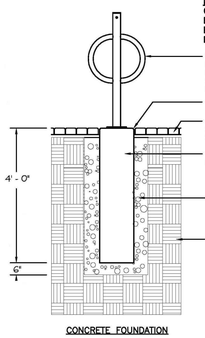
The concrete spike is a permanent anchor. The top of the wedge anchor can also be pounded sideways after installation so that it cannot be removed. Other tamper resistant fasteners are also available for purchase.

When using the special tamper resistant nuts, always set and first tighten the anchors. Once the rack is installed, replace two nuts from the bracket (opposite sides from each other) with the tamper resistant fasteners. DO NOT OVERTIGHTEN the tamper resistant nut.

If you have any questions about installation or other features of the Bike Bike Rack, please call us toll free at 1-800-298-4915







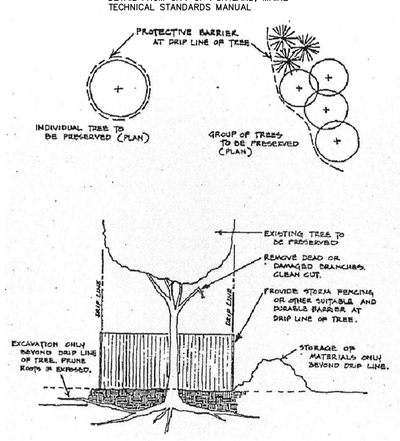
NOTE:
CONCRETE FOUNDATION DETAIL TO BE USED ONLY WHEN BIKE RACK IS LOCATED WITHIN BRICK OR PAVER FIELD, TYP.

TYPICAL BIKE RACK DETAIL

N.T.S.

NOTE:

DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL

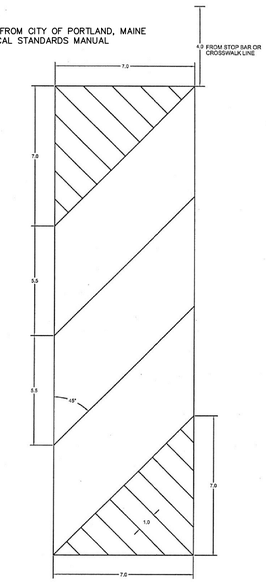


TREE PRESERVATION DETAIL

N.T.S.

NOTE:

DETAIL FROM CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL



MOTORCYCLE PARKING

*ALL PAVEMENT MARKINGS SHALL BE 4 INCH WIDE WHITE LINES.

MOTORCYCLE PARKING

N.T.S.

PERMITTING SET - NOT FOR CONSTRUCTION

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WOODARD & CURRAN

DAVID A. SENUS — STATE OF MAINE — REGISTERED PROFESSIONAL ENGINEER — 11/20/2015

REV	DESCRIPTION	DATE
1	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15
DESIGNED BY: AEA/LJS	CHECKED BY: DAS	22900-C-16.dwg
DRAWN BY: JBC		

CIVIL DETAILS 6

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

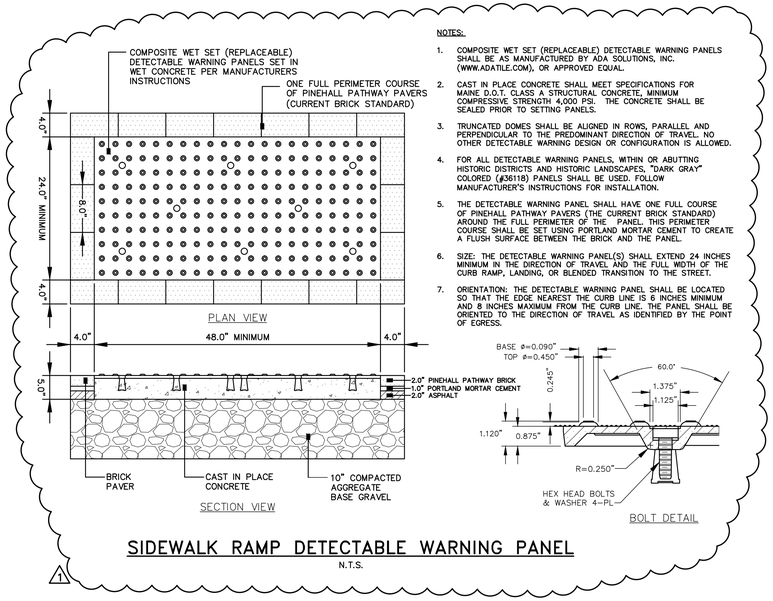
PORTLAND TECHNOLOGY PARK UPDATE & LOT 4 DEVELOPMENT

JOB NO.: 229001.01
DATE: NOVEMBER 2015
SCALE: AS NOTED
SHEET: 17 OF 18

C-16

\\Woodardcurran.net\shared\Projects\229001 SSA - PTP Lot 1 Development\wip\Drawings\CIVIL\229001-C-16.dwg, Nov 23, 2015 - 8:56am

24x36 SHEET 1:1



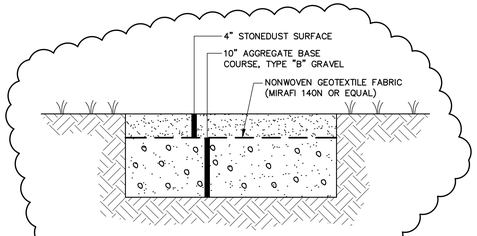
NOTES:

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, 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. THE DETECTABLE WARNING PANEL SHALL HAVE ONE FULL COURSE OF PINEHALL PATHWAY PAVERS (THE CURRENT BRICK STANDARD) AROUND THE FULL PERIMETER OF THE PANEL. THIS PERIMETER COURSE SHALL BE SET USING PORTLAND MORTAR CEMENT TO CREATE A FLUSH SURFACE BETWEEN THE BRICK AND THE PANEL.
6. 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.
7. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.

SIDEWALK RAMP DETECTABLE WARNING PANEL

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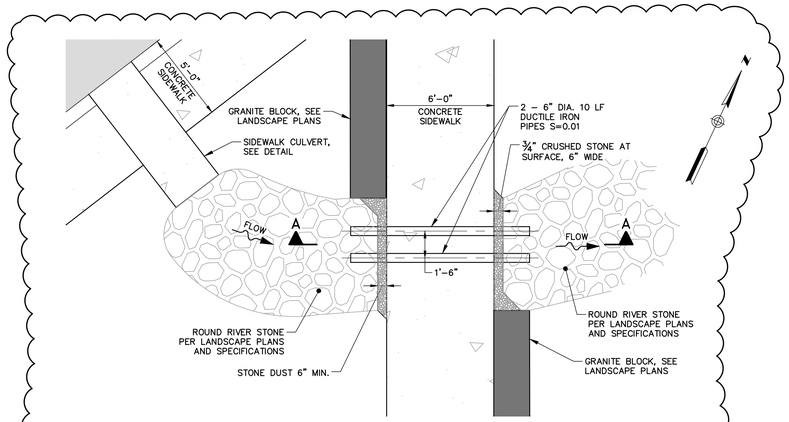
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STONE DUST WALKWAY

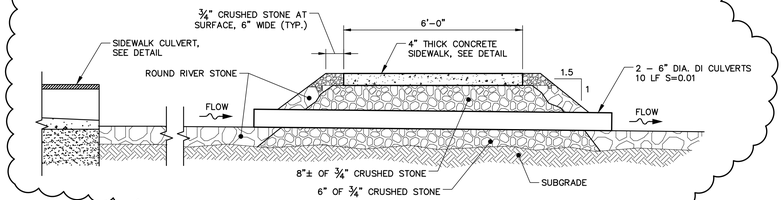
N.T.S.

1



PLAN

SCALE: N.T.S.



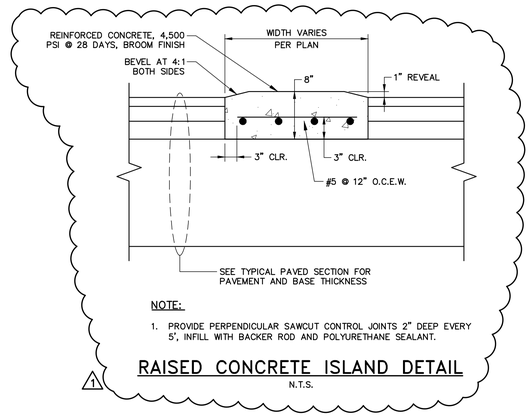
SECTION A–A

SCALE: N.T.S.

STORMWATER CROSSING

SCALE: N.T.S.

1



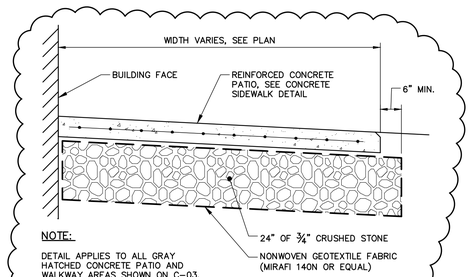
NOTE:

1. PROVIDE PERPENDICULAR SAWCUT CONTROL JOINTS 2" DEEP EVERY 5', INFILL WITH BACKER ROD AND POLYURETHANE SEALANT.

RAISED CONCRETE ISLAND DETAIL

N.T.S.

1



NOTE:

DETAIL APPLIES TO ALL GRAY HATCHED CONCRETE PATIO AND WALKWAY AREAS SHOWN ON C-03.

CONCRETE PATIO DETAIL

N.T.S.

1

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STATE OF MAINE
DAVID A. SENUS
10791
REGISTERED PROFESSIONAL ENGINEER
11/20/2015

REV	DESCRIPTION	DATE
1	LEVEL III SITE PLAN RESPONSE TO COMMENTS	11/20/15

DESIGNED BY: LJS | CHECKED BY: DAS
DRAWN BY: JBC | 22900-C-17.dwg

CIVIL DETAILS 7

CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE
& PATRONS OXFORD INSURANCE CO.

PORTLAND TECHNOLOGY PARK UPDATE
& LCE 4 DEVELOPMENT

JOB NO.:229001.01
DATE: NOVEMBER 2015
SCALE: AS NOTED
SHEET: 18 OF 18

C-17

\\Woodardcurran.net\shared\Projects\229001 SSA - PTP Lot 1 Development\wip\Drawings\CIVIL\229001-C-17.dwg, Nov 23, 2015 - 8:57am

MATERIALS PLAN - KEY

- CONCRETE PAVING
- GRANITE WALL OR SITTING BLOCK
- GRANITE TERRACE BANDING
- STONE DUST SURFACE
- BOLLARD LIGHT
- STICK LIGHT

Parking (See Civil Drawings)

CONCRETE PAVING (Natural Color, Broom Finish, Saw Cut Joints)

GRANITE BANDING, TYP. (2' x 2' x 2", Thermal Finish) 3/L-3

CONCRETE SIDEWALK (6'-0" Wide Concrete Sidewalk with (2) 6" Culverts Underneath the Sidewalk to Pass Water from the Rain Garden, See Civil Drawings for Specifications for Sidewalk and Culvert)

BOLLARD LIGHT, TYP. (See Lighting Consultant Drawings for Manufacturer, Model and Specifications)

CONCRETE SIDEWALK (See Civil Drawings for Specifications)

SEAT-HEIGHT GRANITE BLOCK, TYP. (2' Wide, 18" Tall, Length Varies, Thermal Finish on Top and Sides, See Detail) 2/L-3

(2) 6" CULVERTS (See Civil Drawings)

RAIN GARDEN CENTERLINE

9-12" DIAM. RIVER ROCK IN RAIN GARDEN; SEE DETAIL 1/L-3

RAIN GARDEN CENTERLINE

RAIN GARDEN (See Planting Plan)

RAIN GARDEN CENTERLINE

9-12" DIAM. RIVER ROCK IN RAIN GARDEN; SEE DETAIL 1/L-3

SEAT-HEIGHT GRANITE BLOCK, TYP. (2' Wide, 18" Tall, Length Varies, Thermal Finish, Top and Sides, See Detail) 2/L-3

RAIN GARDEN PLANTING BED (See Planting Plan)

BACK TERRACE

10'

12'

21'-5"

8'

(5) BIKE RACKS
Manufacturer: DERO
Product: Bike Hitch
Powder Coated Black Finish
www.dero.com

PLANTING BED (See Planting Plan)

BOLLARD LIGHT, TYP. (See Electrical Drawings for Manufacturer, Model and Specifications)

Parking (See Civil Drawings)

CONCRETE SIDEWALK (See Civil Drawings for Specifications)

STONE DUST WALK (See Civil Drawings)

BOLLARD LIGHT, TYP. (See Lighting Consultant Drawings for Manufacturer, Model and Specifications)

TRANSFORMER ON CONCRETE PAD (See Civil and Electrical Drawings for Specifications)

PLANTING BED (See Planting Plan)

BOLLARD LIGHT (See Lighting Consultant Drawings for Manufacturer, Model and Specifications)

CONCRETE SIDEWALK (See Civil Drawings)

PLANTING BED (See Planting Plan)

PLANTING BED (See Planting Plan)

PLANTING BED (See Planting Plan)

PLANTING BED (See Planting Plan)

PLANTING BED (See Planting Plan)

ROOF OVERHANG (See Arch. Drawings)

STONE DUST WALK (See Civil Drawings)

SIGN (By Others)

PLANTING BED (See Planting Plan)

ENTRY/DROP-OFF

10'-2"

CONCRETE WALK (See Civil Drawings)

(2) BIKE RACKS
Manufacturer: DERO
Product: Bike Hitch
Powder Coated Black Finish
www.dero.com

CONCRETE PAVING (NATURAL COLOR, BROOM FINISH, SAW CUT JOINTS)

PLANTING BED (See Planting Plan)

FRONT TERRACE

14'-1 1/2"

12'-7 1/2"

6'-6"

6'-6"

3/L-3 GRANITE BANDING, TYP. (2' X 2', THERMAL FINISH)

CONCRETE SIDEWALK and Let Down (See Civil Drawings for Specifications)

PAVED ISLAND (See Civil Drawings)

Gravel Wetland (See Civil Drawings)

Gravel Wetland (See Civil Drawings)

STICK LIGHT, TYP. (See Lighting Consultant Drawings for Manufacturer, Model and Specifications)

SEAT HEIGHT GRANITE BLOCK, TYP. (2' Wide, 18" Tall, Length Varies, Thermal Finish on Top and Sides, See Detail) 2/L-3

CONCRETE PAVING (NATURAL COLOR, BROOM FINISH, SAW CUT JOINTS)

N

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207.772.4656

Richardson & Associates,
Landscape Architects
11 Middle Street Saco, Maine 04072
richardsonassociates.com
t. 207 286.9291

PROJECT NAME:

PATRONS OXFORD OFFICES

PORTLAND TECHNOLOGY PARK
RAND ROAD, PORTLAND, ME

SEAL:

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REVISION:

1	DATE
2	DATE
3	DATE
4	DATE
5	DATE
6	DATE

DATE OF ISSUE:	November 20, 2015
PROJECT NUMBER:	2105-0100 Patrons Oxford
STATUS:	100% Design Development

Materials Plan

SCALE: 1" = 10'

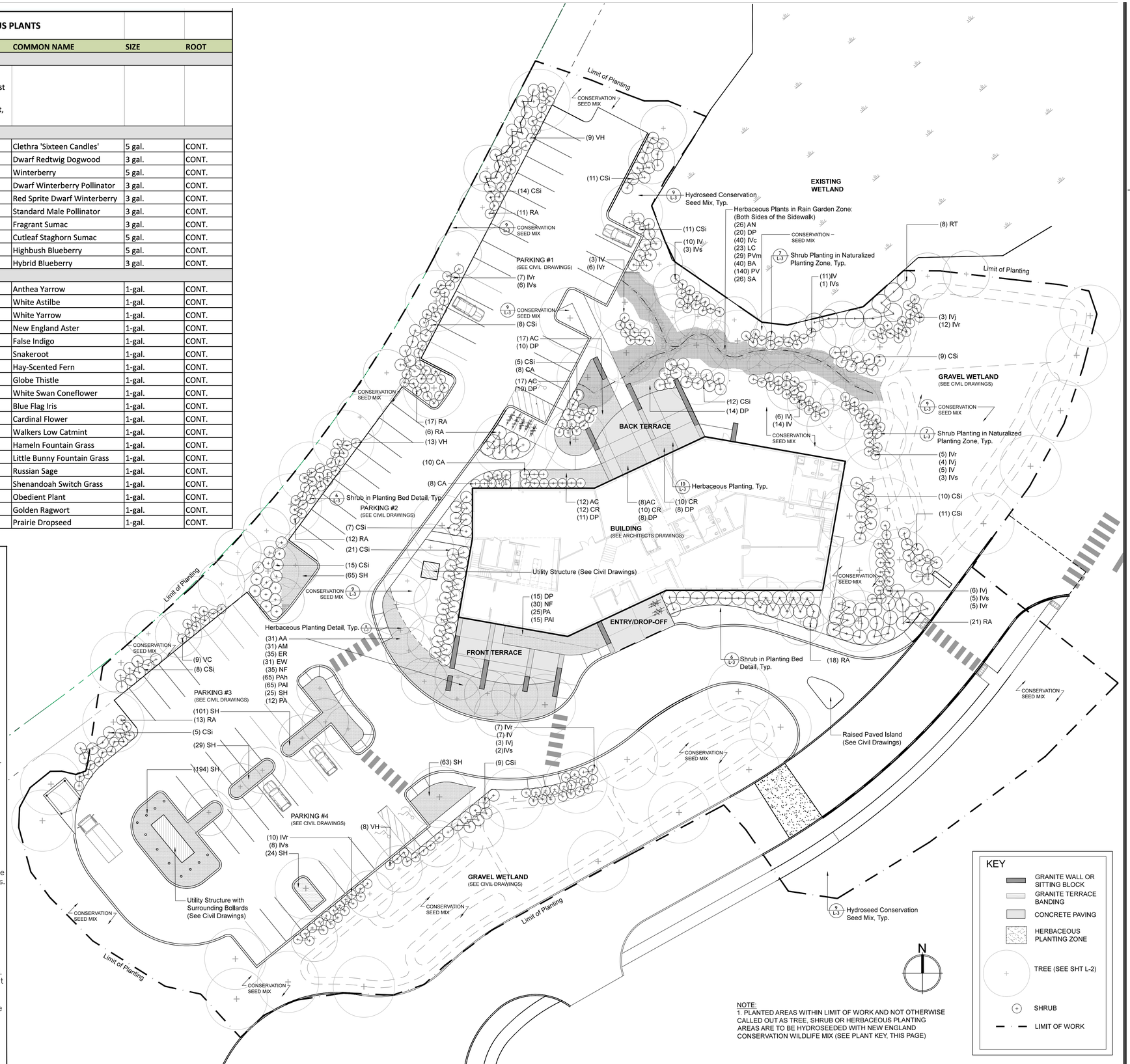
L-1

PATRONS OXFORD OFFICES - PLANTING SCHEDULE - SHRUBS & HERBACEOUS PLANTS

TYPE	QUANTITY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT
Seed Mix						
			New England Conservation Wildlife Mix. **Application rate**: 25lbs/acre (apply 2x in first year: spring and fall). **Source:** New England Wetland Plants, Inc. / 820 West St. Amherst, MA 01002 / t. (413) 548-8000			
Shrubs						
	16	CA	Clethra alnifolia 'Sixteen Candles'	Clethra 'Sixteen Candles'	5 gal.	CONT.
	155	Csi	Cornus sericea 'Isanti'	Dwarf Redtwig Dogwood	3 gal.	CONT.
	50	IV	Ilex verticillata	Winterberry	5 gal.	CONT.
	22	IVj	Ilex verticillata 'Jim Dandy'	Dwarf Winterberry Pollinator	3 gal.	CONT.
	52	IVr	Ilex verticillata 'Red Sprite'	Red Sprite Dwarf Winterberry	3 gal.	CONT.
	29	IVs	Ilex verticillata 'Southern Gentleman'	Standard Male Pollinator	3 gal.	CONT.
	207	RA	Rhus aromatica	Fragrant Sumac	3 gal.	CONT.
	8	RT	Rhus typhina 'Laciniata'	Cutleaf Staghorn Sumac	5 gal.	CONT.
	9	VC	Vaccinium corymbosum	Highbush Blueberry	5 gal.	CONT.
	30	VH	Vaccinium x hybrid	Hybrid Blueberry	3 gal.	CONT.
Perennials & Grasses						
	31	AA	Achillea 'Anthea'	Anthea Yarrow	1-gal.	CONT.
	54	AC	Astilbe chinensis 'Visions in White'	White Astilbe	1-gal.	CONT.
	31	AM	Achillea millefolium sp.	White Yarrow	1-gal.	CONT.
	26	AN	Aster novae-angliae	New England Aster	1-gal.	CONT.
	40	BA	Baptisia australis	False Indigo	1-gal.	CONT.
	32	CR	Cimicifuga racemosa 'Hillside Black Beauty'	Snakeroot	1-gal.	CONT.
	96	DP	Dennstaedtia punctilobula	Hay-Scented Fern	1-gal.	CONT.
	35	ER	Echinops ritro	Globe Thistle	1-gal.	CONT.
	31	EW	Echinacea 'White Swan'	White Swan Coneflower	1-gal.	CONT.
	40	IVc	Iris versicolor	Blue Flag Iris	1-gal.	CONT.
	23	LC	Lobelia cardinalis	Cardinal Flower	1-gal.	CONT.
	65	NF	Nepeta x faassenii 'Walkers Low'	Walkers Low Catmint	1-gal.	CONT.
	65	PAh	Pennisteum alopecuroides 'Hameln'	Hameln Fountain Grass	1-gal.	CONT.
	80	Pal	Pennisteum alopecuroides 'Little Bunny'	Little Bunny Fountain Grass	1-gal.	CONT.
	37	PA	Perovskia atriplicifolia	Russian Sage	1-gal.	CONT.
	140	PV	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	1-gal.	CONT.
	29	PVm	Physostegia virginiana 'Miss Manners'	Obedient Plant	1-gal.	CONT.
	26	SA	Senecio aureus	Golden Ragwort	1-gal.	CONT.
	501	SH	Sporobolus heterolepis	Prairie Dropseed	1-gal.	CONT.

GENERAL PLANTING PLAN NOTES:

1. Contractor shall begin maintenance immediately after planting and shall continue until final acceptance. Contractor shall be responsible for all means and methods of watering and maintenance.
2. The Landscape contractor shall supply all plant materials in quantities sufficient to complete all plantings shown on this drawing. Clarify any discrepancies with the landscape architect prior to ordering plant material.
3. All materials shall conform to the guidelines established by the American Association of Nurserymen.
4. All plants shall bear the same relationship to finish grade as the original grades before digging.
5. The landscape contractor shall guarantee all plant materials for one(1) full year from date of substantial completion.
6. All plant materials are subject to the approval of the landscape architect at the nursery and at the site.
7. All areas of the site which have been disturbed and not otherwise developed shall be loamed with a minimum depth of 6" of topsoil and seeded as specified.
8. Landscape contractor is encouraged to provide the landscape architect with concerns and/or suggestions with regard to proposed plant material selection prior to placing a purchase order.
9. All trees located adjacent to walks and drives shall have 6' of clear height to first branching.
10. Contractor shall verify all tree removals with landscape architect prior to start of construction.
11. Contractor shall obtain approval for proposed lawn seed mix prior to installation.
12. No plant shall be put into the ground before rough grading has been finished and approved by the project landscape architect.
13. All plants shall be balled and wrapped or container grown as specified. No container grown stock will be accepted if it is root bound. All root wrapping material made of synthetics or plastics shall be removed at the time of planting.
14. With container grown stock, the container shall be removed and the container ball shall be cut through the surface in two vertical locations.
15. The location of trees, shrubs and bedlines shall be staked for approval by the landscape architect prior to installation. The contractor shall notify the landscape architect 48 hours prior to required site visit.
16. All broad leaf evergreen plants shall be sprayed with an antidessicant at the beginning of their first winter.
17. All plants shall be installed as per details and the contract specifications. The landscape contractor shall refer to the contract specifications for additional requirements.
18. All plants and stakes shall be set plumb unless otherwise specified.
19. The landscape contractor shall provide loam fill as per the contract specifications.
20. All plants shall be watered thoroughly twice during the first 24–hour period after planting. All plants shall then be watered by the contractor, as necessary to insure health until final acceptance.
21. The landscape contractor shall refer to the plant list and planting specifications for seasonal requirements and other restrictions related to the time of planting.



NOTE:
1. PLANTED AREAS WITHIN LIMIT OF WORK AND NOT OTHERWISE CALLED OUT AS TREE, SHRUB OR HERBACEOUS PLANTING AREAS ARE TO BE HYDROSEEDED WITH NEW ENGLAND CONSERVATION WILDLIFE MIX (SEE PLANT KEY, THIS PAGE)

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simonsarchitects.com
207.772.4656

Richardson & Associates,
Landscape Architects
11 Middle Street Saco, Maine 04072
richardsonassociates.com
t. 207 286.9291

PROJECT NAME:

PATRONS OXFORD OFFICES

PORTLAND TECHNOLOGY PARK
RAND ROAD, PORTLAND, ME

SEAL:

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6	DATE

DATE OF ISSUE: November 20, 2015
PROJECT NUMBER:
STATUS: For Permit Only

Planting Plan - Shrubs & Herbaceous Plants

SCALE: 1" = 20'

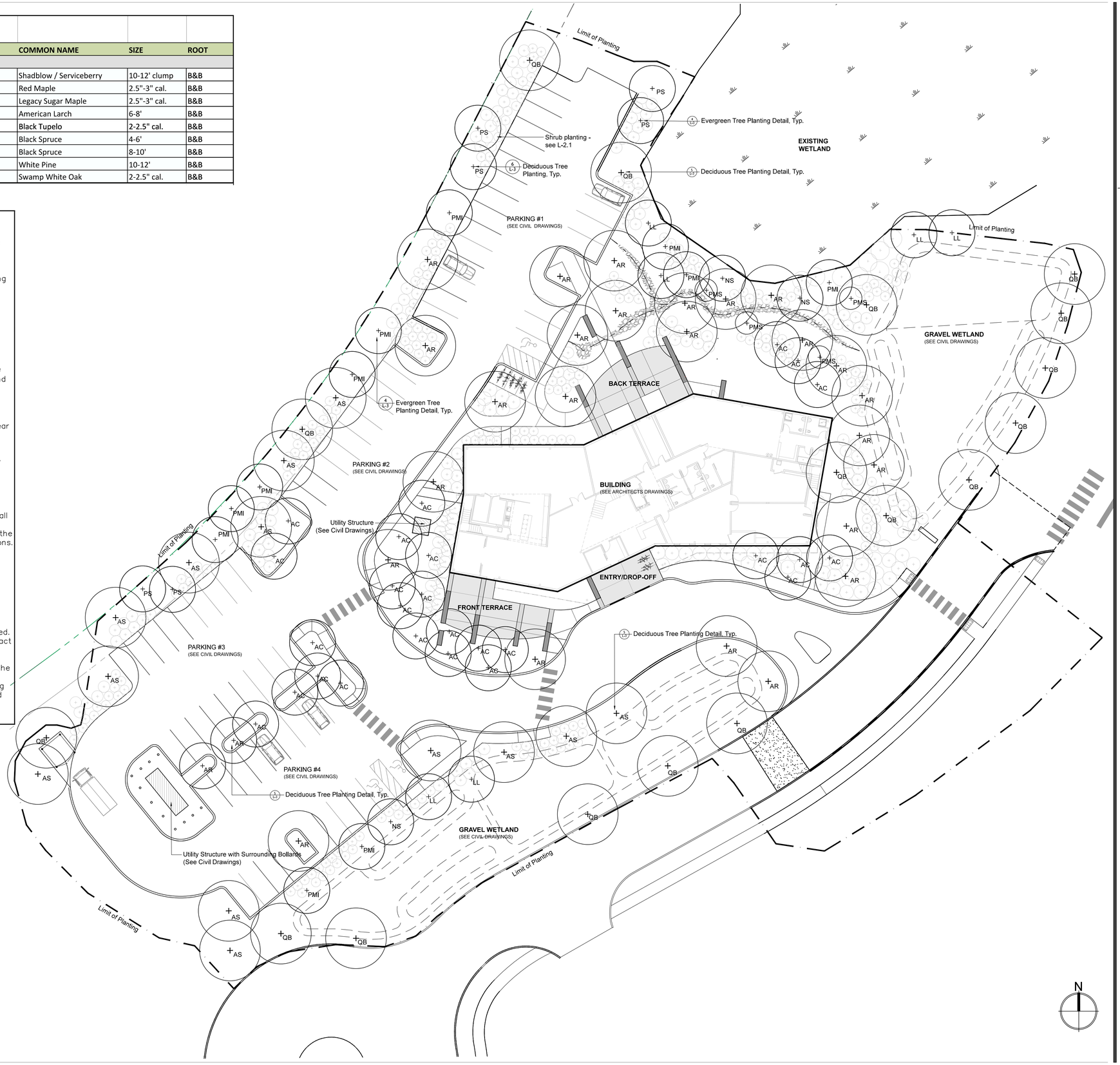
L-2.1

PATRONS OXFORD OFFICES - PLANTING SCHEDULE - TREES

TYPE	QUANTITY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT
Trees						
	29	AC	Amelanchier canadensis	Shadblow / Serviceberry	10-12' clump	B&B
	24	AR	Acer rubrum	Red Maple	2.5"-3" cal.	B&B
	12	AS	Acer saccharum 'Legacy'	Legacy Sugar Maple	2.5"-3" cal.	B&B
	6	LL	Larix laricinia	American Larch	6-8'	B&B
	4	NS	Nyssa sylvatica	Black Tupelo	2-2.5" cal.	B&B
	11	PMI	Picea mariana (large)	Black Spruce	4-6'	B&B
	4	PMs	Picea mariana (small)	Black Spruce	8-10'	B&B
	6	PS	Pinus strobus	White Pine	10-12'	B&B
	17	QB	Quercus bicolor	Swamp White Oak	2-2.5" cal.	B&B

GENERAL PLANTING PLAN NOTES:

1. Contractor shall begin maintenance immediately after planting and shall continue until final acceptance. Contractor shall be responsible for all means and methods of watering and maintenance.
2. The Landscape contractor shall supply all plant materials in quantities sufficient to complete all plantings shown on this drawing. Clarify any discrepancies with the landscape architect prior to ordering plant material.
3. All materials shall conform to the guidelines established by the American Association of Nurserymen.
4. All plants shall bear the same relationship to finish grade as the original grades before digging.
5. The landscape contractor shall guarantee all plant materials for one(1) full year from date of substantial completion.
6. All plant materials are subject to the approval of the landscape architect at the nursery and at the site.
7. All areas of the site which have been disturbed and not otherwise developed shall be loamed with a minimum depth of 6" of topsoil and seeded as specified.
8. Landscape contractor is encouraged to provide the landscape architect with concerns and/or suggestions with regard to proposed plant material selection prior to placing a purchase order.
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17. All plants shall be installed as per details and the contract specifications. The landscape contractor shall refer to the contract specifications for additional requirements.
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PROJECT NAME:

PATRONS OXFORD OFFICES

PORTLAND TECHNOLOGY PARK
RAND ROAD, PORTLAND, ME

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REVISION:

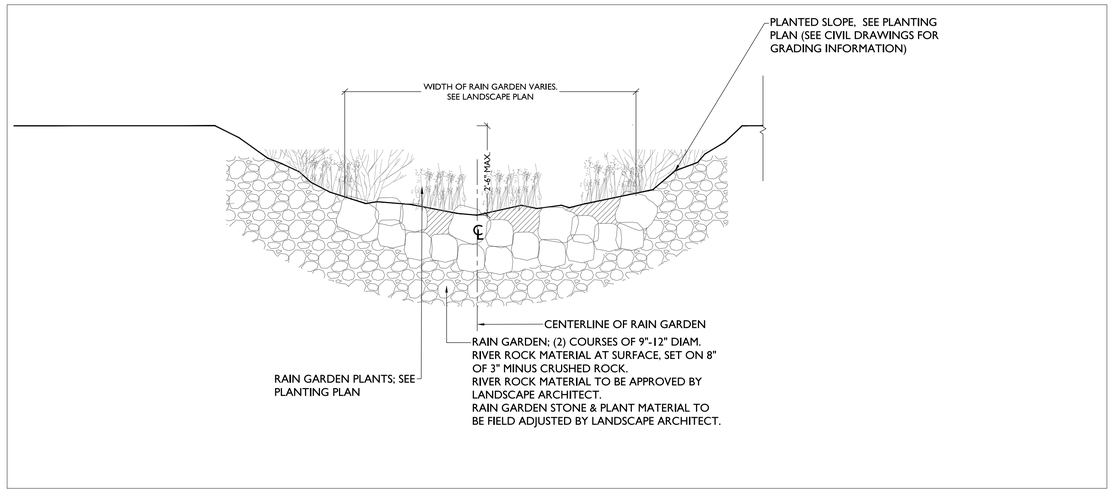
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DATE OF ISSUE: November 20, 2015
PROJECT NUMBER:
STATUS: For Permit Only

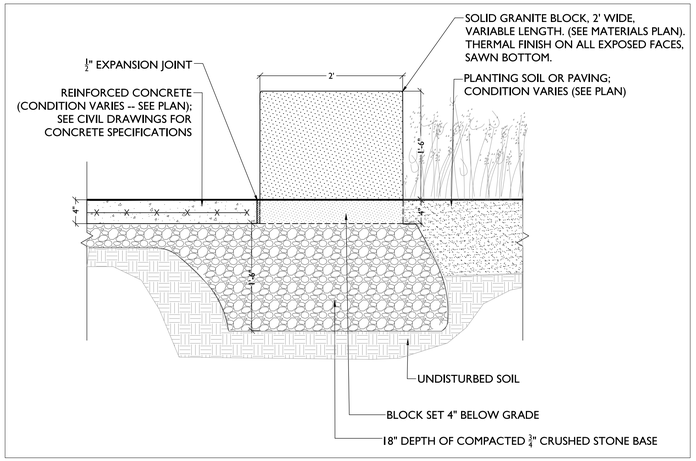
Planting Plan -Trees

SCALE: 1" = 20'

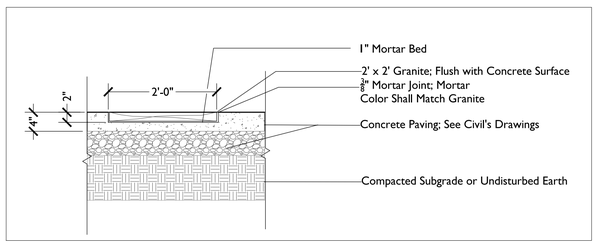
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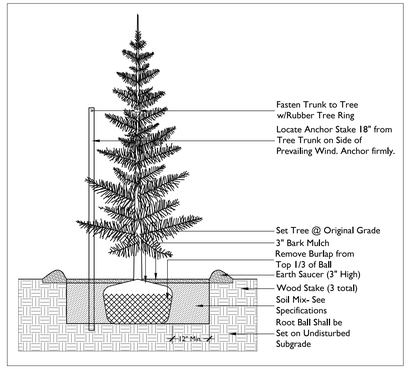
1 RAIN GARDEN
Scale: NTS



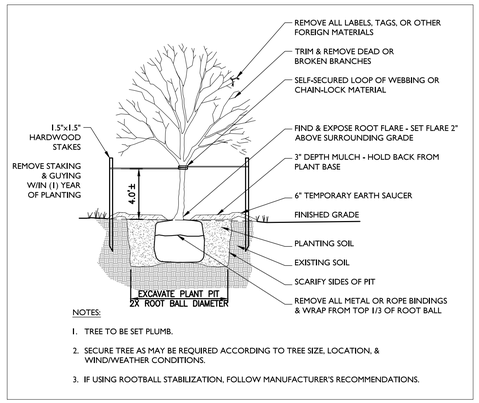
2 SEAT HEIGHT GRANITE BLOCK AT TERRACE
Scale: NTS



3 GRANITE BAND IN CONCRETE DETAIL
Scale: NTS



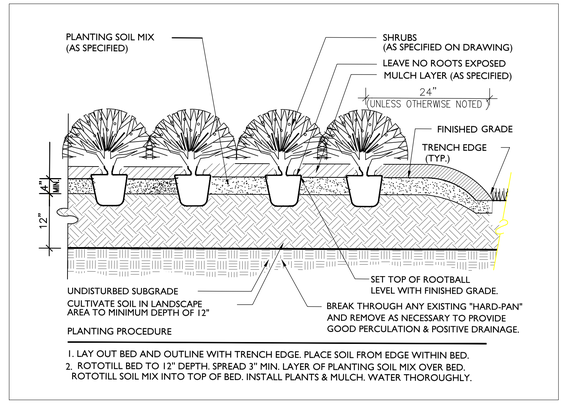
4 EVERGREEN TREE PLANTING DETAIL
Scale: NTS



NOTES:

1. TREE TO BE SET PLUMB.
2. SECURE TREE AS MAY BE REQUIRED ACCORDING TO TREE SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
3. IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

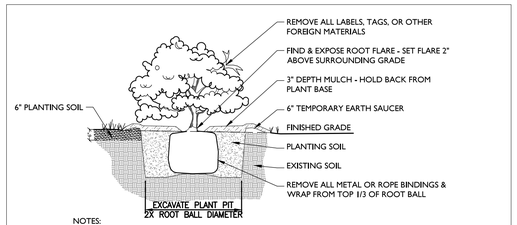
5 DECIDUOUS TREE PLANTING DETAIL
Scale: NTS



PLANTING PROCEDURE

1. LAY OUT BED AND OUTLINE WITH TRENCH EDGE. PLACE SOIL FROM EDGE WITHIN BED.
2. ROTOTILL BED TO 12" DEPTH. SPREAD 3" MIN. LAYER OF PLANTING SOIL MIX OVER BED. ROTOTILL SOIL MIX INTO TOP OF BED. INSTALL PLANTS & MULCH. WATER THOROUGHLY.

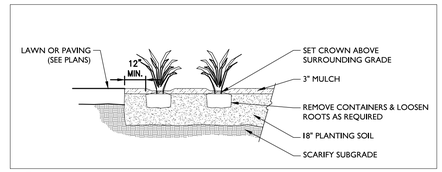
6 SHRUBS IN PLANTING BED
Scale: NTS



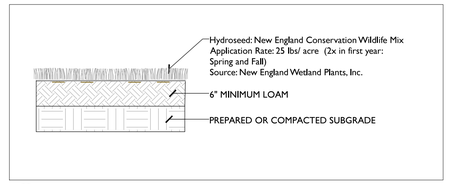
NOTES:

1. SHRUB TO BE SET PLUMB.
2. SECURE SHRUB AS MAY BE REQUIRED ACCORDING TO SIZE, LOCATION, & WIND/WEATHER CONDITIONS.
3. IF USING ROOTBALL STABILIZATION, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

7 SHRUB PLANTING DETAIL (NATURALIZED PLANTING ZONE)
Scale: NTS



8 HERBACEOUS PLANTING DETAIL
Scale: NTS



9 HYDROSEED DETAIL FOR CONSERVATION SEED MIX
Scale: NTS

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Richardson & Associates,
Landscape Architects
11 Middle Street Saco, Maine 04072
richardsonassociates.com
t. 207 286.9291

PROJECT NAME:

PATRONS OXFORD OFFICES

PORTLAND TECHNOLOGY PARK
RAND ROAD, PORTLAND, ME

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PROJECT NUMBER:	2105-0100 Patrons Oxford
STATUS:	100% Design Development

Site Details - Landscape

SCALE: See Detail

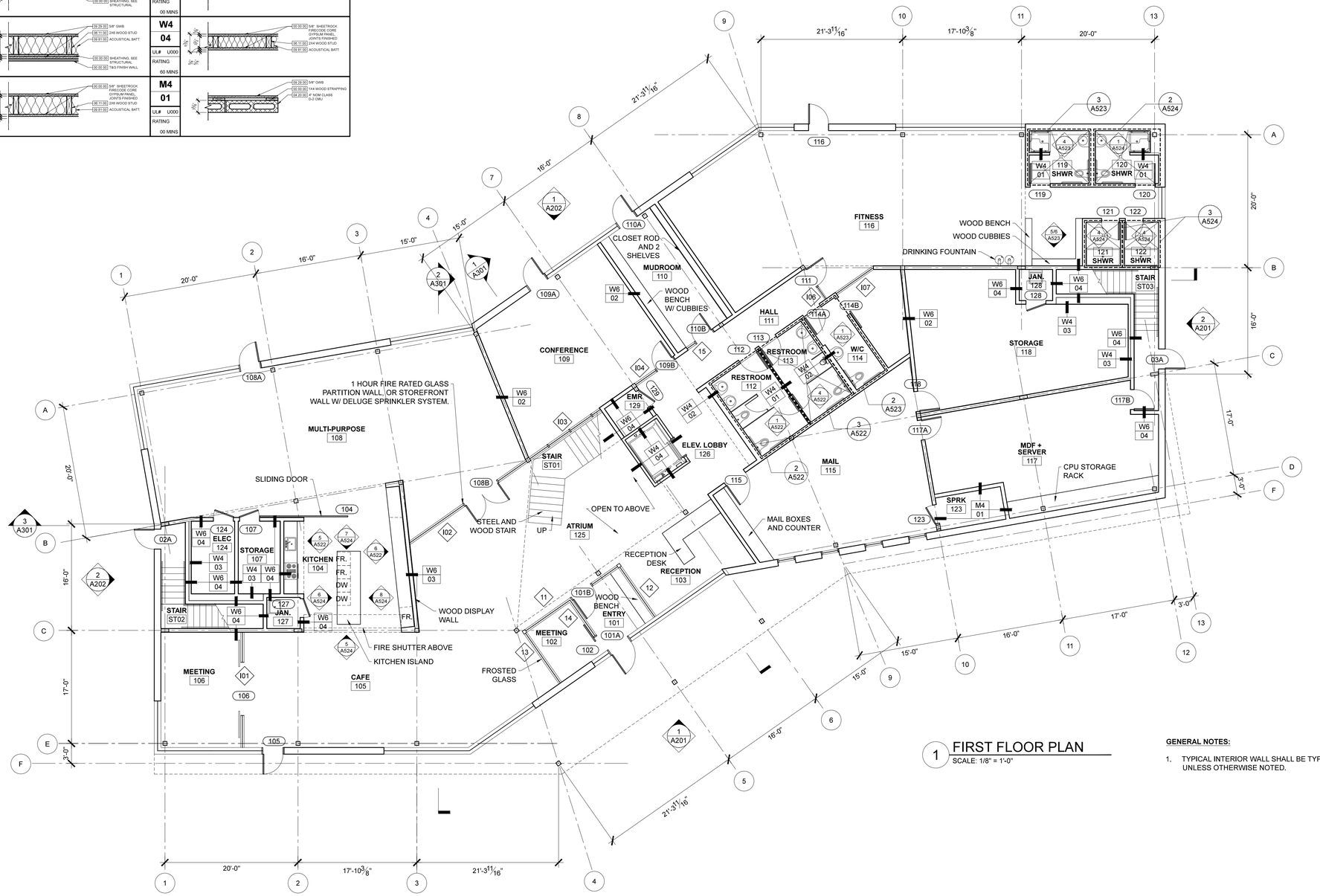
L-3

PARTITION TYPES
SCALE 1 1/2" = 1'-0"

SEE STRUCTURAL DRWGS FOR REINFORCEMENT AND GROUTING REQS
INTERIOR DOOR FRAMES CENTERED ON PARTITIONS UNO, TYP
FOR FINISHES SEE FINISH SCHEDULE

USE MOISTURE RESISTANCE GWB IN THE FOLLOWING ROOMS:
* WOMEN'S BATHROOM 112
* MEN'S BATHROOM 111
* SHOWER 116
* TEACHING KITCHEN 116 (PLUMBING WALL ONLY)
* TEACHING SPACE 115 (PLUMBING WALL ONLY)

W6 01	UL# U000 RATING 00 MINS	09 29 00 5/8" GWB; 06 11 00 2X6 WOOD STUD; 09 81 00 ACOUSTICAL BATT
W6 02	UL# U000 RATING 00 MINS	09 29 00 5/8" GWB; 06 11 00 2X6 WOOD STUD; 09 81 00 ACOUSTICAL BATT; 00 00 00 SHEATHING, SEE STRUCTURAL
W6 03	UL# U000 RATING 00 MINS	09 29 00 5/8" GWB; 06 11 00 2X6 WOOD STUD; 09 81 00 ACOUSTICAL BATT; 00 00 00 SHEATHING, SEE STRUCTURAL; 00 00 00 T&G FINISH WALL
W6 04	UL# U000 RATING 60 MINS	00 00 00 5/8" SHEETROCK FIRECODE CORE GYPSUM PANEL, JOINTS FINISHED; 06 11 00 2X6 WOOD STUD; 09 81 00 ACOUSTICAL BATT
W4 01	UL# U000 RATING 00 MINS	09 29 00 5/8" GWB; 06 11 00 2X4 WOOD STUD; 09 81 00 ACOUSTICAL BATT
W4 02	UL# U000 RATING 00 MINS	09 29 00 5/8" GWB; 06 11 00 2X4 WOOD STUD; 09 81 00 ACOUSTICAL BATT
W4 03	UL# U000 RATING 00 MINS	09 29 00 5/8" GWB; 06 11 00 2X4 WOOD STUD
W4 04	UL# U000 RATING 60 MINS	00 00 00 5/8" SHEETROCK FIRECODE CORE GYPSUM PANEL, JOINTS FINISHED; 06 11 00 2X4 WOOD STUD; 09 81 00 ACOUSTICAL BATT
M4 01	UL# U000 RATING 00 MINS	09 29 00 5/8" GWB; 00 00 00 1X4 WOOD STRAPPING; 04 20 00 4" NOM CLASS D.U CMU



1 FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. TYPICAL INTERIOR WALL SHALL BE TYPE W6/01, UNLESS OTHERWISE NOTED.

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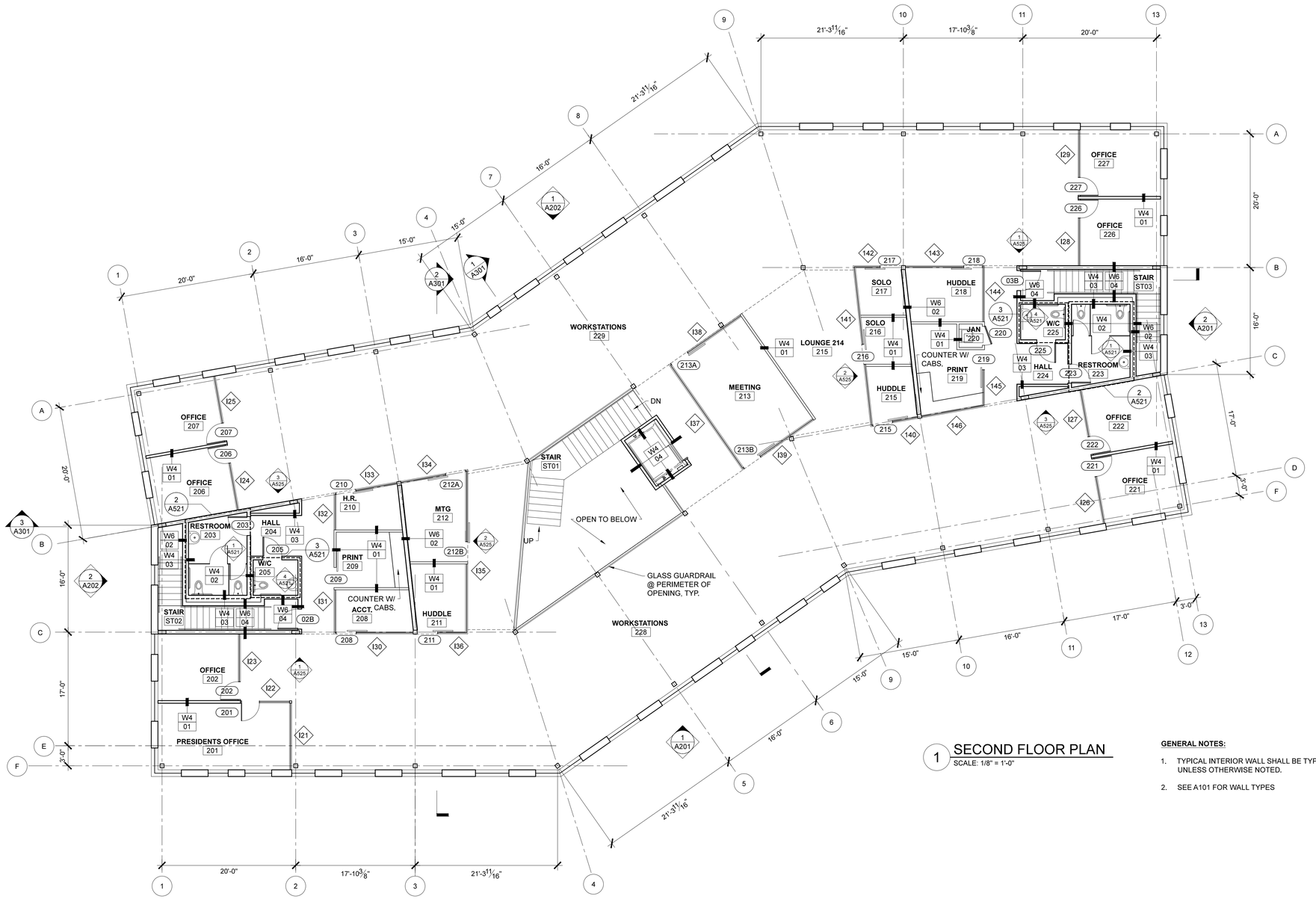
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FIRST FLOOR PLAN

A101



1 SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. TYPICAL INTERIOR WALL SHALL BE TYPE W6/01, UNLESS OTHERWISE NOTED.
2. SEE A101 FOR WALL TYPES

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SECOND FLOOR PLAN

A102



1 CLERESTORY PLAN
SCALE: 1/8" = 1'-0"

2 ROOF PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. TYPICAL INTERIOR WALL SHALL BE TYPE W6/01, UNLESS OTHERWISE NOTED.
2. SEE A101 FOR ALL TYPES
3. INDICATES AREAS OF TAPERED INSULATION

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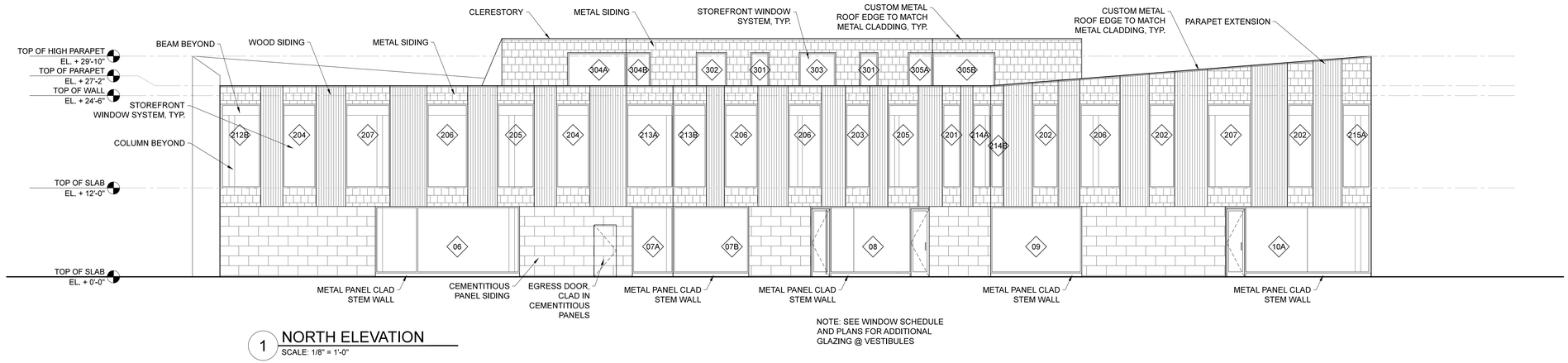
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5	DATE
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DATE OF ISSUE:	September 21, 2015
PROJECT NUMBER:	2105-0100 Patrons Oxford
STATUS:	100% Design Development

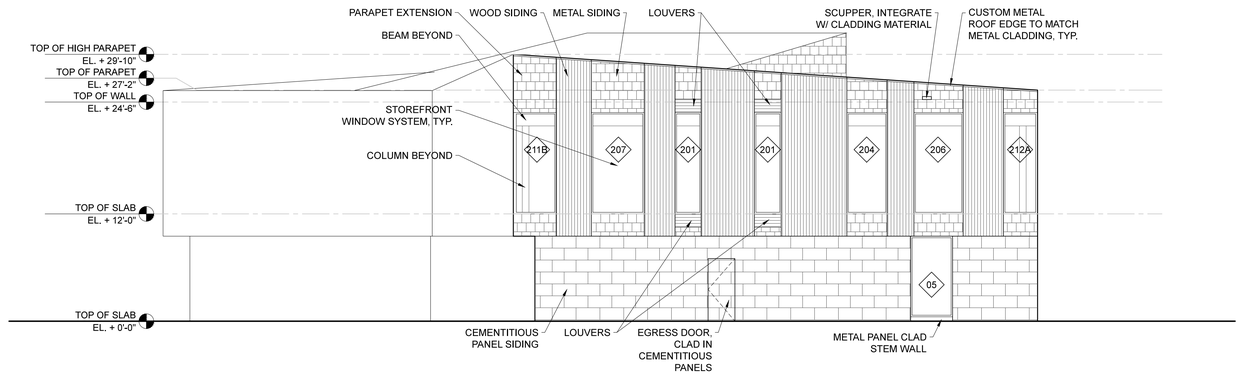
CLERESTORY AND ROOF PLAN

A103



NOTE: SEE WINDOW SCHEDULE AND PLANS FOR ADDITIONAL GLAZING @ VESTIBULES

1 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



2 EAST ELEVATION
SCALE: 1/8" = 1'-0"

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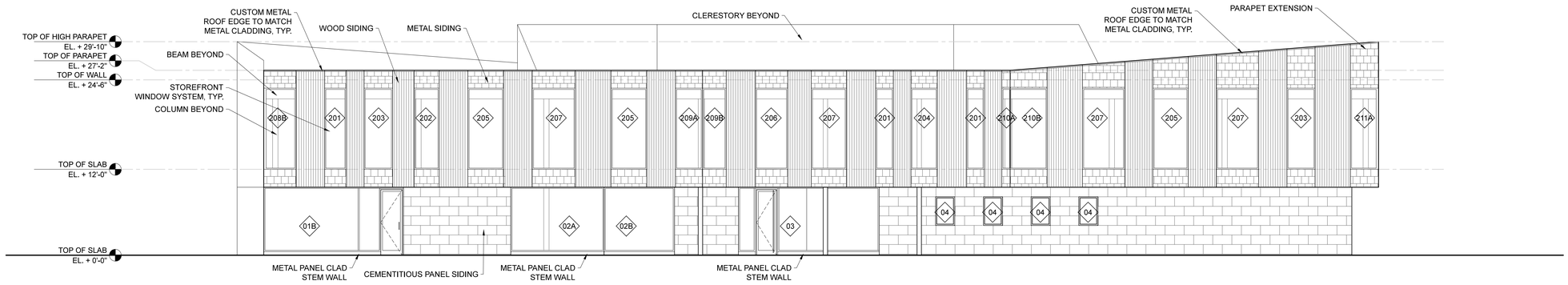
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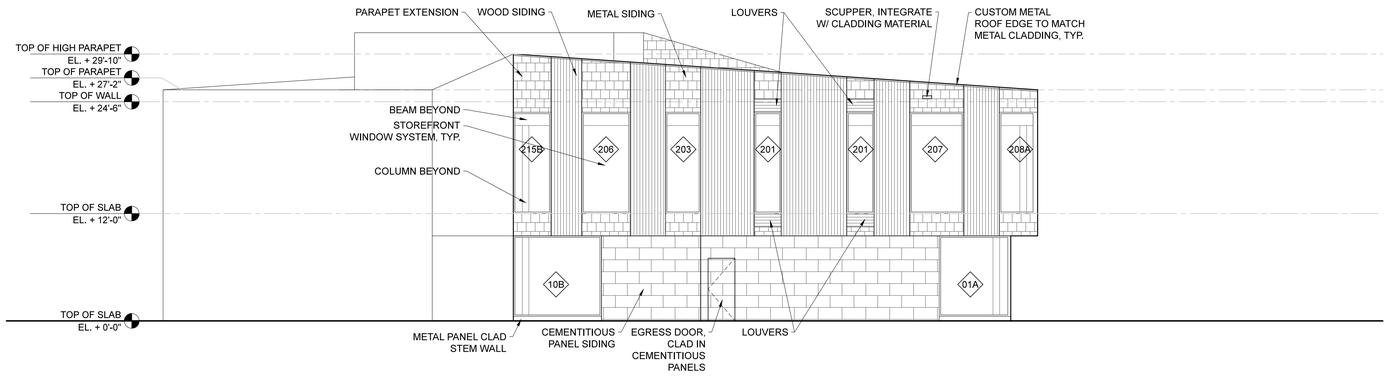
BUILDING ELEVATIONS

A201



1 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

NOTE: SEE WINDOW SCHEDULE AND PLANS FOR ADDITIONAL GLAZING @ VESTIBULES



2 WEST ELEVATION
SCALE: 1/8" = 1'-0"

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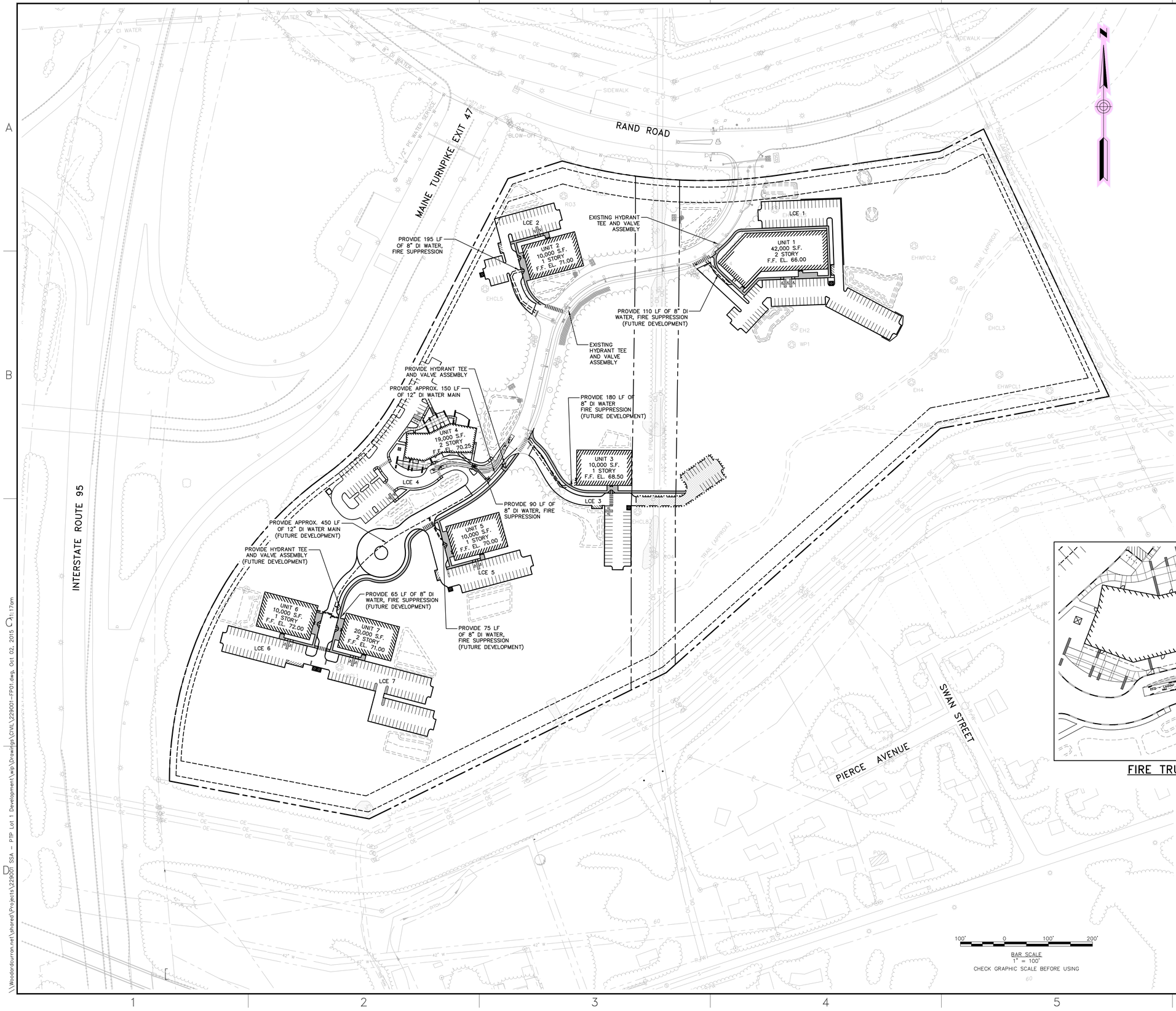
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BUILDING ELEVATIONS

A202



APPLICANT:
PORTLAND TECHNOLOGY PARK – SUBDIVISION AMENDMENT
CITY OF PORTLAND ECONOMIC DEVELOPMENT DIVISION
CONTACT: NELLE HANIG
389 CONGRESS STREET
PORTLAND, ME 04101
PHONE: (207)756-8019
NRH@PORTLANDMAINE.GOV

LCE 4 – LEVEL III SITE PLAN
PATRONS OXFORD INSURANCE
CONTACT: MARK PETTINGILL
P.O. BOX 1960
AUBURN, ME 04211
PHONE: (800)442-6071

ARCHITECT:
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ENGINEER:
WOODARD & CURRAN
DAVID SENUS
PHONE: (207)774-2112
41 HUTCHINS DRIVE
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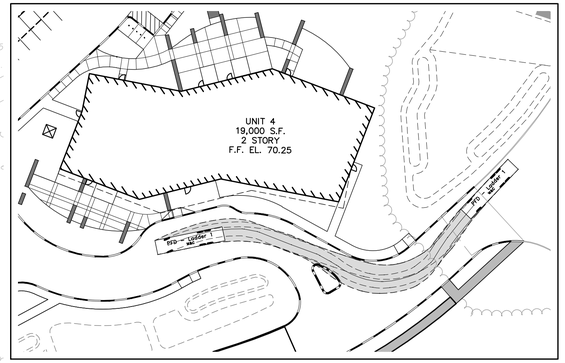
PROPOSED OCCUPANCY TYPE: "BUSINESS USE"

PROPOSED BUILDING TYPE : T.B.D.

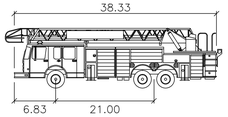
SQUARE FOOTAGE OF STRUCTURES			
BUILDING NO.	STORY 1 S.F.	STORY 2 S.F.	TOTAL S.F.
1	21,000 S.F.	21,000 S.F.	42,000 S.F.
2	10,000 S.F.	–	10,000 S.F.
3	10,000 S.F.	–	10,000 S.F.
4	9,500 S.F.	9,500 S.F.	19,000 S.F.
5	10,000 S.F.	–	10,000 S.F.
6	10,000 S.F.	–	10,000 S.F.
7	10,000 S.F.	10,000 S.F.	20,000 S.F.

ELEVATION OF STRUCTURES		
BUILDING NO.	F.F. EL.	NO. OF STORIES
1	66.00	2
2	71.00	1
3	68.50	1
4	70.25	2
5	70.00	1
6	72.00	1
7	71.00	2

PROPOSED FIRE PROTECTION:
ALL STRUCTURES SHALL BE SPRINKLERED



FIRE TRUCK TURNING TEMPLATE
SCALE: 1" = 40'



PFD – Ladder 1

Width	: 8.00'
Track	: 8.00'
Lock to Lock Time	: 6.0"
Steering Angle	: 28.4

100' 0 100' 200'
BAR SCALE
1" = 100'
CHECK GRAPHIC SCALE BEFORE USING

CITY REVIEW SET
NOT FOR CONSTRUCTION

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STATE OF MAINE DAVID A. SENUS 10791 REGISTERED PROFESSIONAL ENGINEER
10/10/2011

REV.	DESCRIPTION	DATE
DESIGNED BY:	MAC	CHECKED BY: DAS
DRAWN BY:	JDE	22900-FP01.dwg

FIRE PLAN

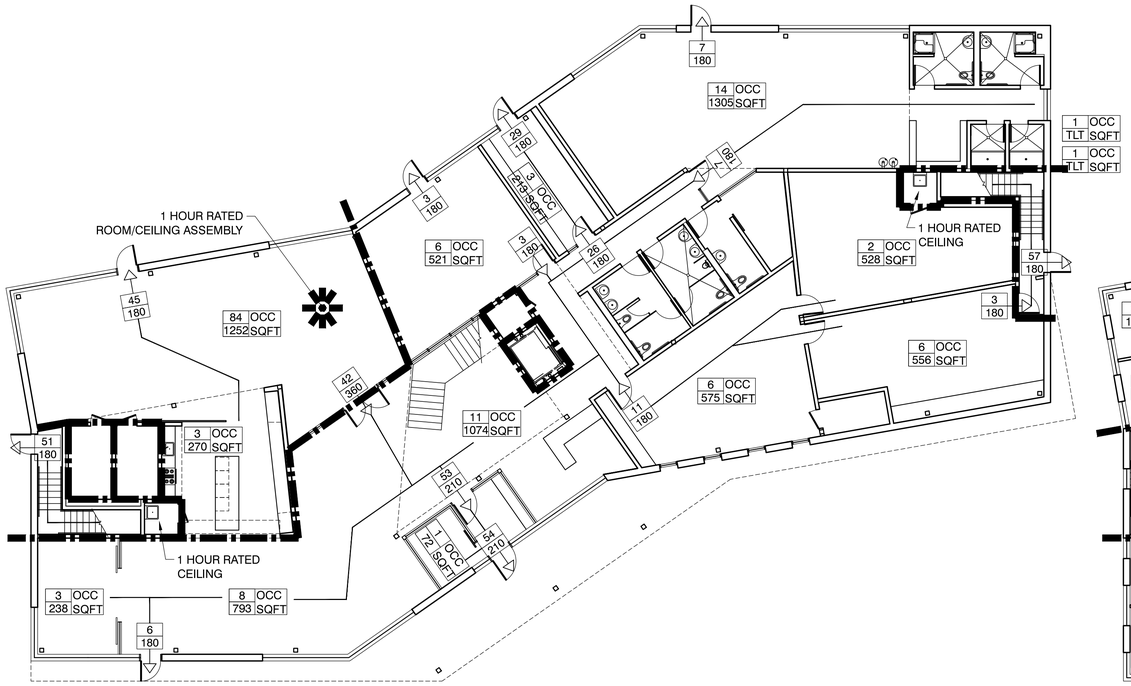
CITY OF PORTLAND
ECONOMIC DEVELOPMENT OFFICE
PORTLAND, MAINE

PORTLAND TECHNOLOGY PARK

JOB NO.: 203848.63
DATE: DECEMBER, 2011
SCALE: 1"=100'
SHEET: 1 OF 1

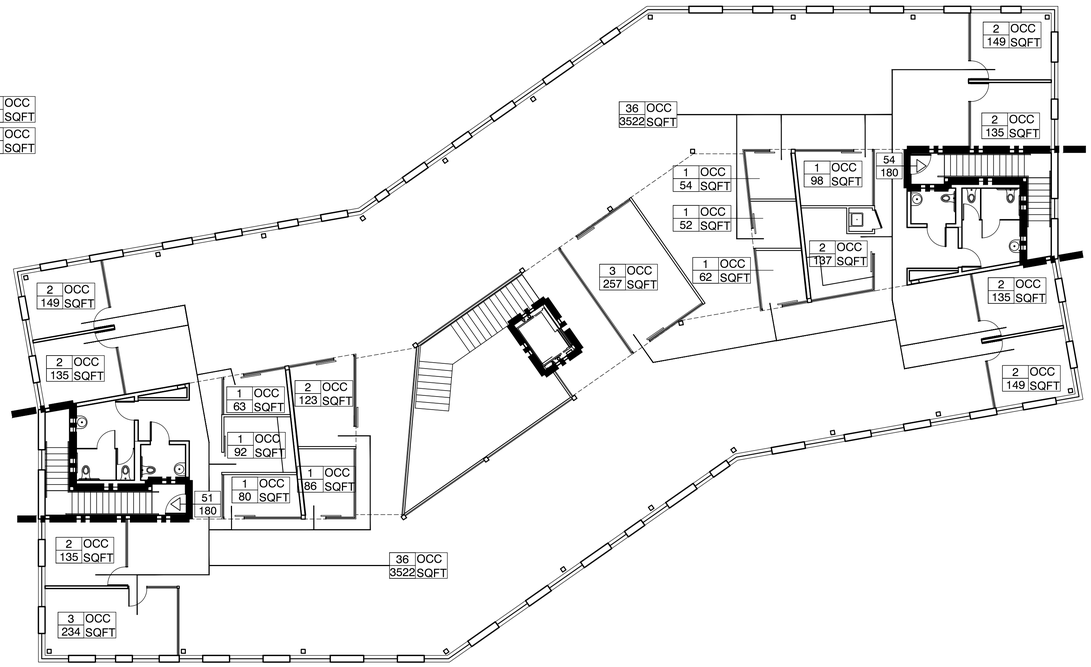
FP-01

\\Woodardcurran.net\shared\Projects\22900 SSA - PTP Lot 1 Development\wip\Drawings\CIVIL\22900-FP01.dwg, Oct 02, 2015 11:17am



1 FIRST FLOOR CODE PLAN

SCALE: 3/32" = 1'-0"



2 SECOND FLOOR CODE PLAN

SCALE: 3/32" = 1'-0"

FIRE RATINGS LEGEND

1–HOUR FIRE RATED SEPARATION WITH 1 HOUR OPENINGS

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CODE SUMMARY

date: Friday, July 23, 2015
project: Patrons Oxford Insurance, Patrons Oxford, 2015-0100
Subject: Schematic Design Code Review
prepared by: Philip Chaney PC Scott Simons Architects SSA

APPLICABLE CODES

Maine Uniform Building and Energy Code "MUBEC"
Consists of the following applicable codes:

2009 International Building Code (IBC)
2009 International Energy Conservation Code (IECC)
2007 ASHRAE 62.1 (Ventilation for Acceptable Indoor Air Quality)
2007 ASHRAE90.1 - (Energy Standard for Buildings except Low-Rise Residential Buildings) editions without addenda.
E-1465-2006, Standard Practice for Radon Control Options for the Design and Construction of New Low-Rise Residential Buildings.
Maine State Internal Plumbing Code based on the 2009 Uniform Pluming Code
State of Maine Subsurface Wastewater Disposal Rules Version dated: Jan 18, 2011
2011 National Electrical Code (NEC)

Fire/ Life Safety

NFPA Life Safety Code as adopted by the State of Maine
Including but not limited to:

2009 NFPA 101: Life Safety Code
2007 NFPA 13: Installation of Sprinkler Systems, [2010 Edition through Equivalency]

Accessibility

2010 ADA Standards for Accessible Design

NOTE: All Codes shall include changes/amendments by the State of Maine

OCCUPANCY CLASSIFICATION

Mixed Use and Occupancy
Business, B-2
Assembly, A-3 (IBC Sec 302, 303, 304) (NFPA)

AUTOMATIC SUPRESSION SYSTEM

Fully Coverage (NFPA 13)

GENERAL BUILDING INFORMATION AND

ALLOWABLE BUILDING HEIGHTS AND AREA

(IBC Chapter 5, Table 503) (NFPA)

Building Height (To mid-height of the roof) – 2 Stories

Allowable Building Area

	Occupancy (per IBC chapter 3)	Con. Type (per IBC chapter 6)	Allowable Area (IBC Table 503 modified per IBC 506)	Actual Area
Lower Floor Level				
	B-2	VB	9,000 Tabular, per floor 14,400 Allowable	9,481 sf
Upper Floor Level				
	B-2	VB	9,000 Tabular, per floor 14,400 Allowable	10,372 sf
Total				19,853 sf

Building Area Modifications

(IBC Sec 506.1, 506.2, 506.3)

60% Total increase taken

General Equation:
A(a) = A(t) + [A(t) x I(f)] + [A(t) x I(s)]

Where :

A(a)= 9,000 sf
A(t)=
I(f)=
I(s)=

Frontage Increase (IBC 506.2)

I(f) of 60% taken

450' Building Perimeter total
378' Building Perimeter >30' clear

I(f) =[F/P – 0.25]W/30

I(f) = [378/443 - .25]30/30 = .59

Where:

I(f)= Area increase due to frontage
F= Building perimeter fronting public way or open space
P = Total building perimeter
W= Width of public way or open space

Automatic Sprinkler Increase (IBC 506.3)

Not taken. Area increase not taken, Approved automatic sprinkler system used to substitute for 1-hour fire resistance rated construction and reflected on Fire Resistive Rating Table below.

TYPES OF CONSTRUCTION

(IBC Table 601, Sec 602) (NFPA 220)

Type VB

FIRE RESISTIVE RATINGS

(IBC Table 601) (NFPA Table A.8.2.1.2)

	Type VB (with sprinklers)
Structural Frame	0
Bearing Walls, Exterior	0
Bearing Walls, Interior	0
Non-Bearing Walls and Partitions, Exterior	0
Non-Bearing Walls and Partitions, Interior	0
Floor Construction and Secondary Members	0
Roof Construction and Secondary Members	0

OCCUPANCY LOAD by Table 1004.1.1 (IBC)

Business Areas - 100 Gross Sq ft per Occupant	15,700 sf	÷ 100sf per occupant =	157occupants
Accessory Storage Areas, Mechanical Rooms	2,901 sf	÷ 300 sf per occupant =	10 occupants
Assembly Without fixed seats, Unconcentrated	1,252 sf	÷ 15 sf per occupant =	84 occupants
			251 total occupants

OCCUPANCY LOAD by Table 7.3.1.2 (NFPA)

Business Use	15,700 sf	÷ 100 sf per occupant =	157 occupants
Storage Use in other than storage ÷ mercantile use	2,901 sf	÷ 500 sf per occupant =	6 occupants
Assembly, less concentrated, w/o fixed seats	1,252 sf	÷ 15 sf per occupant =	84 occupants
			247 total occupants

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PROJECT NAME:

PATRONS OXFORD OFFICES

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RAND ROAD, PORTLAND, ME

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STATUS:	100% Design Development

LIFESAFETY PLAN + CODE SUMMARY

G002



IMAGE 5



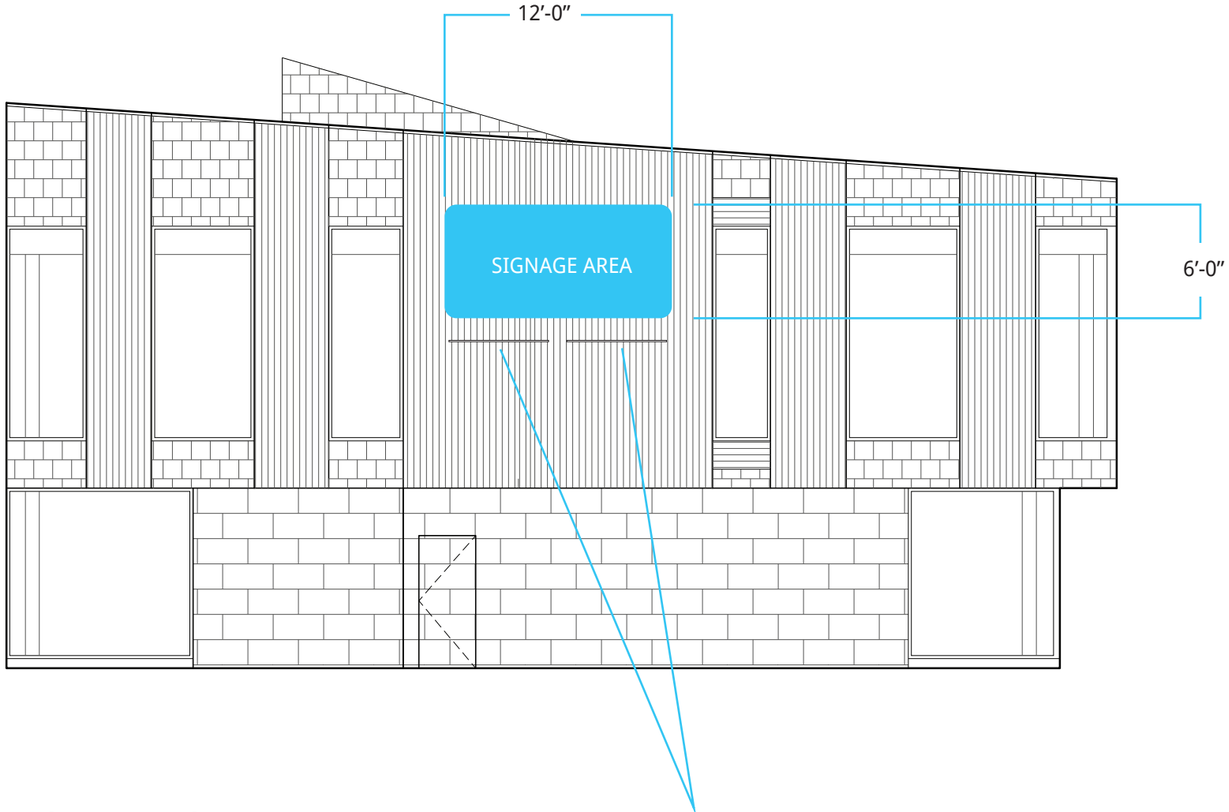
IMAGE 6



IMAGE 7



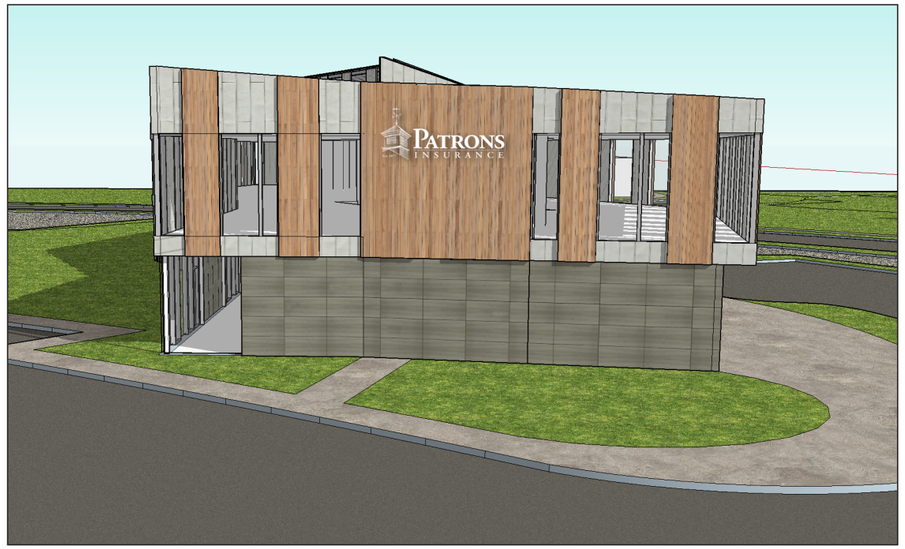
IMAGE 8



WEST ELEVATION

SCALE: 1/8" = 1'-0"

Sign wil be lit from below by thin LED strips attached to building



Example of large building sign with existing logo.

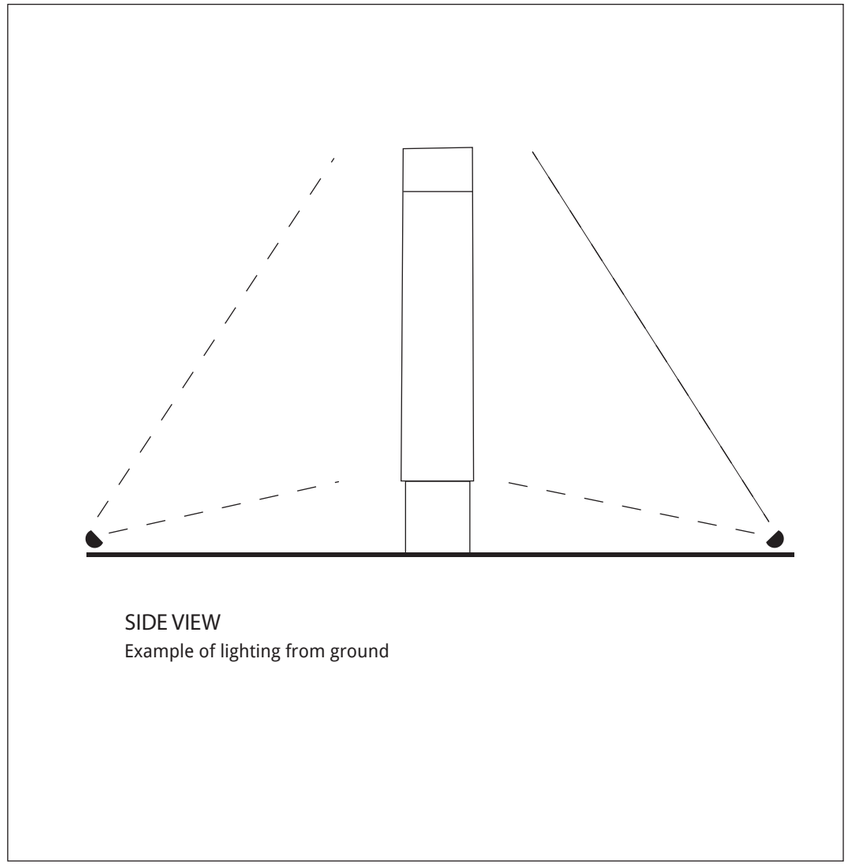
NOTE: Logo design is subject to change.



OPTION A
NOTE: Logo design is subject to change.

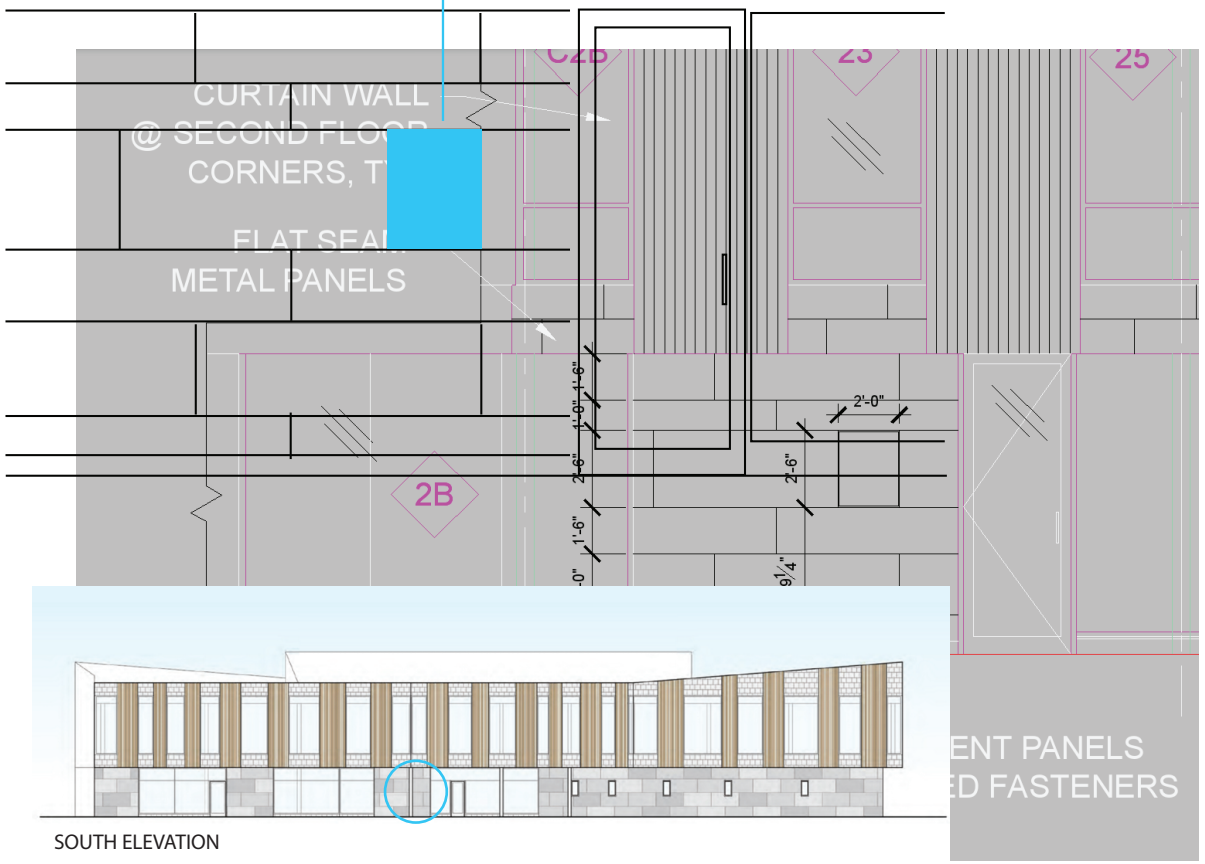


OPTION B
NOTE: Logo design is subject to change.

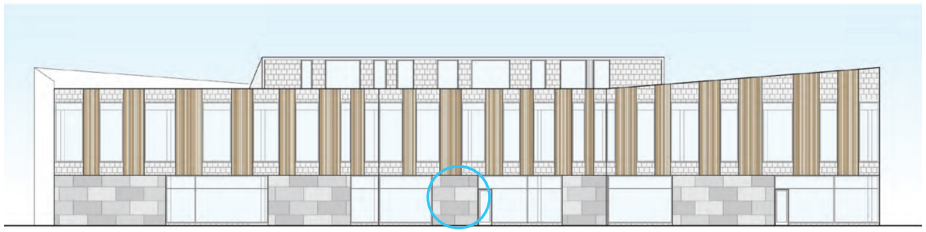


SIDE VIEW
Example of lighting from ground

Location of smaller building sign.



SOUTH ELEVATION



NORTH ELEVATION

2'-0"



2'-6"

Example of large building sign with existing logo.

NOTE: Logo design is subject to change.

Material of sign TBD.

Sign will be lit from overhead ceiling.

PLANNING BOARD REPORT

PORTLAND, MAINE

Portland Retirement Residence
802 Ocean Avenue
Level III Site Plan
Project No.: 2015-164
Lenity Architecture LLC and the Hawthorn Development Group LLC, Applicant

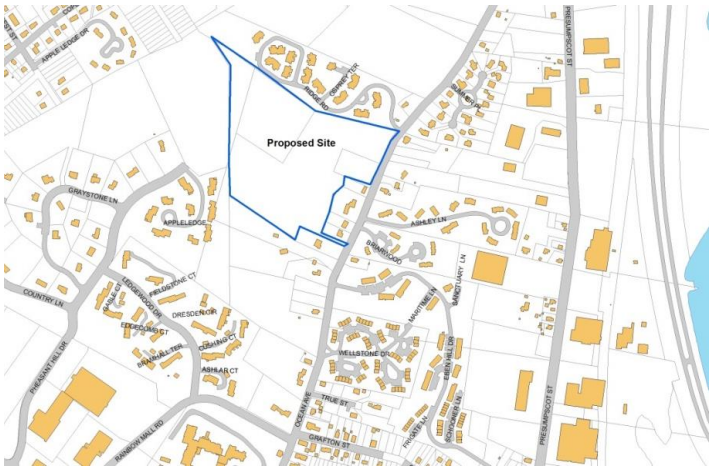
Submitted to: Portland Planning Board **Public Hearing Date**: December 8, 2015 **CBL:** 411 A007001	**Prepared by:** Barbara Barhydt, Development Review Services Manager **Date:** December 4, 2015

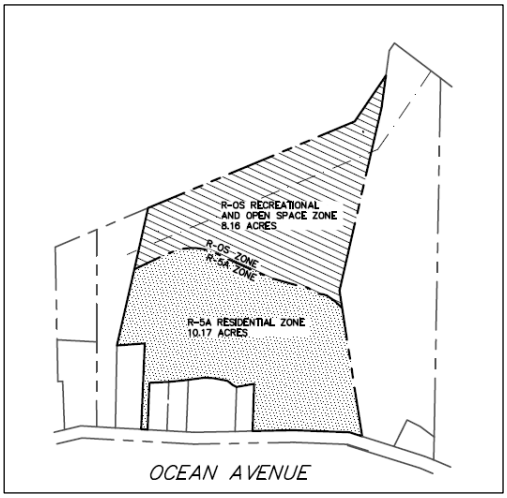
I. INTRODUCTION

Lenity Architecture LLC and the Hawthorn Development Group LLC have submitted a Level III site plan application for a 150 unit congregate care facility at 802 Ocean Avenue. The proposal includes surface parking areas, garages, landscaping, stormwater management systems and pedestrian connections along Ocean Avenue and within the site.

The site has a total of 18.33 acres with 10.16 acres recently zoned to Residential R-5A and the remainder of the parcel (8.17 acres) is zoned Recreation Open Space (ROS). The proposed development is located with the R-5A zone.

The site is subject to the recently approved R-5A Map and Text amendments that the Planning Board considered earlier this year. The Council approved the R-5A text amendments as part of the Board's recommendations for the proposal for the Motherhouse on Stevens Avenue. The Council approved the map amendments for 802 Ocean Avenue as recommended by the Planning Board and the Council rescinded the original conditional rezoning agreement for this site. The project is being reviewed as congregate care facility under the zoning ordinance and the units do not have individual kitchens, so the proposal does not trigger subdivision review.





Development Team

Applicant and Architect: Lenity Architecture, LLC, Mark Lowen
Representative and Engineer: Robert McSorley, PE
Current Property Owner: Graves Hill Land Company, LLC

Required Reviews

Site Plan Review	Art. V Site Plan, Sec 14-521-540
Stormwater Permit	DEP Chapter 500, as revised

Request for Waivers

Seeking a partial waiver from the requirement for bicycle parking. Ten spaces would be required under the commercial standard. A bike rack is proposed that would serve 4 to 6 bicycles. Tom Errico supports the partial waiver of 4 spaces, and thus provide 6 bicycle spaces for employees and visitors.	Section 14-526 4.b. Location and Number of bicycle parking spaces. b. *Non-residential structures.* Two (2) bicycle parking spaces for every ten (10) vehicle parking spaces for the first one hundred (100) required vehicle parking spaces, plus one (1) bicycle parking space for every twenty (20) required motor vehicle parking space over one hundred (100) required vehicle parking spaces. (ii) *Waiver:* The reviewing authority may reduce the required number of bicycle parking spaces if it is determined, based on evidence submitted by the applicant, that the proposed development is expected to generate reduced demand for bicycle parking due to characteristics or uses such as elderly or disabled persons housing or industrial uses located in outlying areas.
Seeking a waiver from the requirement for a TDM. The applicant states that, "This project is unique in that transportation and traffic impacts are greatly reduced because of the use and the community transportation that is provided by the project. Accordingly, we hereby request a waiver from the Transportation Demand Management analysis typically required for Level III site plans." Tom Errico, Consulting Traffic Engineer, supports granting the waiver.	Section 14-526 5. Transportation Demand Management (TDM) *a. The following types of development shall design and implement a Transportation Demand Management (TDM) plan:* (i) All Level III development in the B7 zone; (ii) All commercial or institutional uses of 50,000 sf or more total floor area; (iii) All commercial or institutional uses designed to accommodate 100 or more employees and, for educational institutions, 100 or more students.

A Neighborhood Meeting was held for this project on October 8, 2015 and the packet is under Public Comment with the neighborhood packet (PC-1) and presentation (PC-2). A Planning Board workshop on this proposal was held on October 27, 2015 and comments were received from three residents. Mr. Nadzo from Aldens Walk found the plan to be generally acceptable, but noted the condominium association would continue to monitor the review. Mr. Goodman from Wellstone Condominiums raised concerns about blasting and the potential impacts on their property. Mr. Staub requested additional information regarding the stormwater system and raised concerns about potential water impacts at the workshop. A follow-up meeting with Mr. Staub and Mr. Perkins was held on November 6 th, which included Rob

McSorley, David Senus, Mike Farmer, and Barbara Barhydt. Sebago Technics also provided additional stormwater data, as requested.

A notice of this public hearing was sent to 384 property owners within 500 feet and interested citizens, and appeared in the November 30 and December 1, 2015 editions of the *Portland Press-Herald*.

II. PROJECT DATA

Project Data	**Proposed**
Existing Zoning	R5A: 442,875 sf (10.16 acres) ROS: 355,885 (8.17 acres)
Existing Use	Wooded undeveloped
Proposed Use	Congregate Care facility
Proposed Development	150 units of Congregate Care- for ambulatory residents: no medical or nursing services, Suites include 57 studio units, 78 one and 15 two bedroom units. All meals served in a central dining room.
Parcel Size	798,184 sf (18.33 acres)
Building Footprint	39,869 sf
Building Floor Area	134,646 sf
Impervious Surface Area	127,631 sf
Parking Spaces (on site)	102 (including garages)
Bicycle Parking Spaces	0
Estimated Cost of Project	$18,000,000.00

III. BACKGROUND AND EXISTING CONDITIONS

a. Background

The Board reviewed the OBO Hawthorn Development LLC and Lenity Architecture, LLC's request for zoning map amendments to this site at a public hearing held on June 9, 2015. The Board voted unanimously (Dundon absent) to recommend adoption of the map amendments to R-5A and ROS for the parcel. The Board also recommended to Council that the underlying conditional zoning agreement be rescinded. The agreement regulated the property since 2004, which allowed for a 98 condominium unit project with two mid-rise buildings of up to 100 feet in height along with associated trail improvements. The City Council enacted the amendments and rescinded the underlying agreement on July 20, 2015 (Attachment 1).

The City Council adopted R-5A text amendments on June 15, 2015, which were developed concurrently for McAuley Place and Portland Retirement Residence. The order as passed by the Council is included as Attachment 2. The text amendments defined congregate care to include living units or dwelling units. The term living units is now defined as follows:

> *Living Unit:* An independent self-contained dwelling unit that does not include full kitchen facilities.

Also under the definition section of the Land Use Code, revisions to the net residential density calculations were enacted. Within the R-5A zone multifamily dwellings and congregate care are permitted uses in the zone along with an updated dimensional chart.

b. Existing Conditions

The 18 acre parcel at 802 Ocean Avenue is a wooded site about a half a mile from Washington Avenue, which has one of the highest elevations in Portland with views of Casco Bay. The high point is roughly 170 feet with the elevation varying from 145 to 160 along the western property line and the elevation is 100 to 110 feet along Ocean Avenue. Slopes vary on the site with steep slopes of 15 to 25% near Ocean Avenue and much of the site has bedrock near the surface. A 135 foot wide CMP easement runs along the

rear property line, which is within the portion of the site zoned ROS. The site has 427.62 feet of frontage along Ocean Avenue and the site extends behind single family homes along Ocean Avenue. The Ocean Ridge Condominium project is located to the north of the site along Ocean Avenue and the Alden's Walk condominium project on Wildwood Circle abuts the rear boundary line. There are single family homes and condominium projects along the easterly side of Ocean Avenue in the vicinity of the site.

IV. PROPOSED DEVELOPMENT

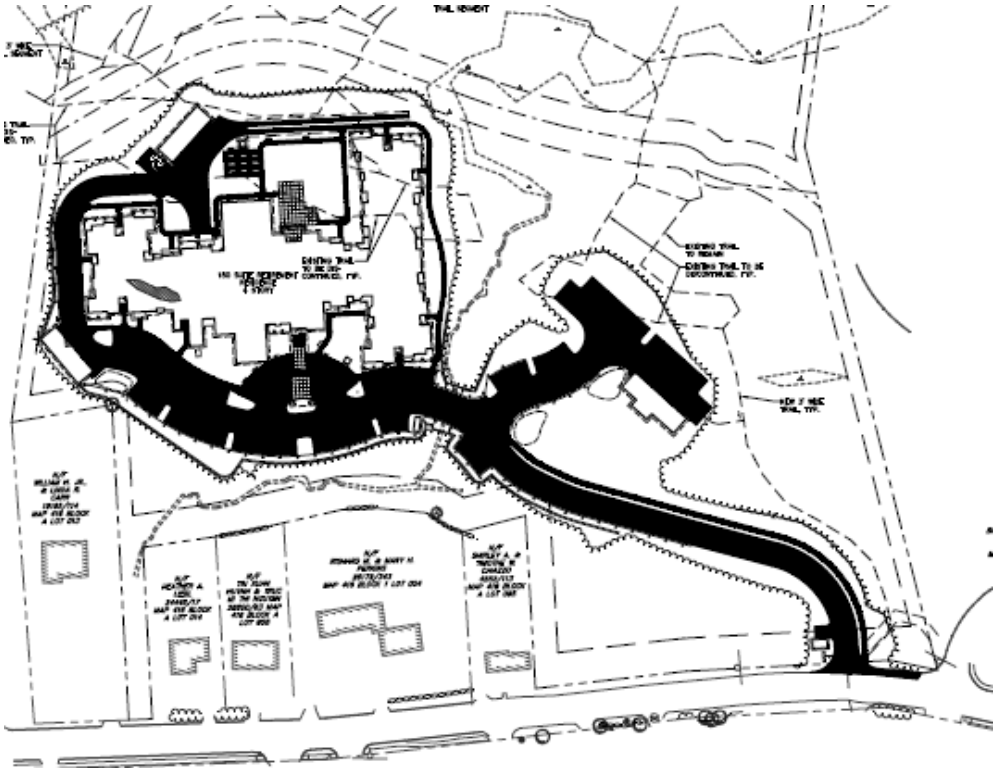
Hawthorn Development Group, LLC and Lenity Architecture, LLC propose to construct a 150 unit congregate care facility. The 150 suites are considered as living units and not dwelling units, per the City's new definition, since full kitchens are not proposed within each unit. The proposal includes 57 efficiencies, 78 one bedroom, and 15 two bedroom units. This will be a privately funded and operated facility with no medical or nursing services; however, there will be 24-hour coverage by the management team. The services to be provided include the following: a) three meals prepared daily; b) housekeeping; c) laundering service; d) private van transportation; and d) variety of social and physical services.

The building includes a central dining room, porch, activity room, tv room, beauty salon, media room, reading room, and multi-purpose room. The site improvements for the residents include gardens, outdoor seating areas, patios, and sidewalks around the building. A landscaping plan has been submitted, which shows landscaping along the access road, around and within the surface parking lots, and by the building.

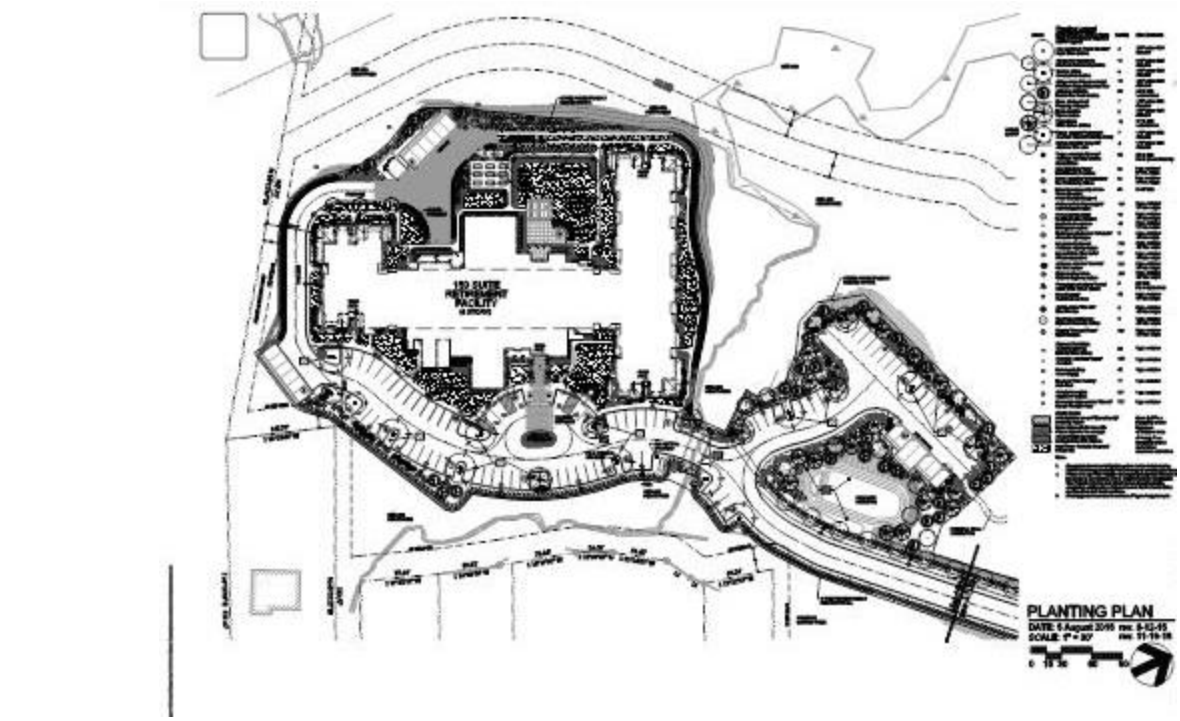
Access to the site is from Ocean Avenue with one roadway leading to the facility. Parking for 102 vehicles is proposed on site, which include three garages that house 16 vehicle spaces and two van spaces. The access way extends behind the building with a turn around and loading area. A fire lane and reinforced patio is proposed to provide access for fire trucks. The applicant is requesting a partial waiver from providing 10 bicycle parking spaces and is providing one bike rack for 4-6 bicycles. Most of the parking is located along the driveway near the building with one area of parking to the northerly side of the site. The applicant is proposing to install roughly 393 feet of sidewalk along the easterly side of Ocean Avenue in order to fill a gap in the public sidewalk system.

The congregate care facility is proposed to the southerly side of the site to meet the following objectives:

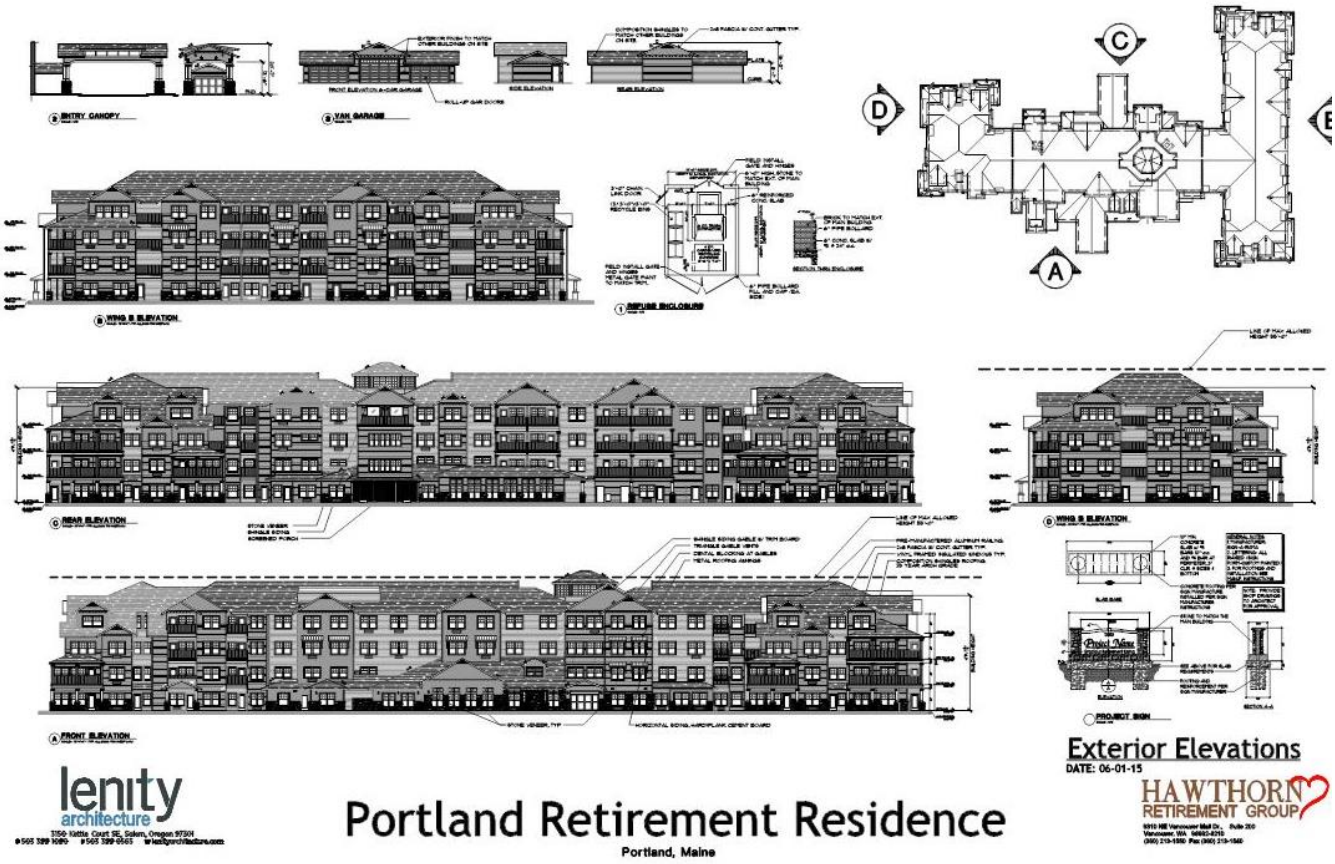
- Minimize the potential visual impacts of the development from adjoining properties;
- Provide separation and buffering between the existing development;
- Maintain the height of the structure below the tree canopies to the west of the proposed building, which can be accomplished due to the changes in the grade;
- Minimize the amount of material that needs to be excavated and/or blasted; and
- Minimize impacts on the natural resources of the site, including wetlands.



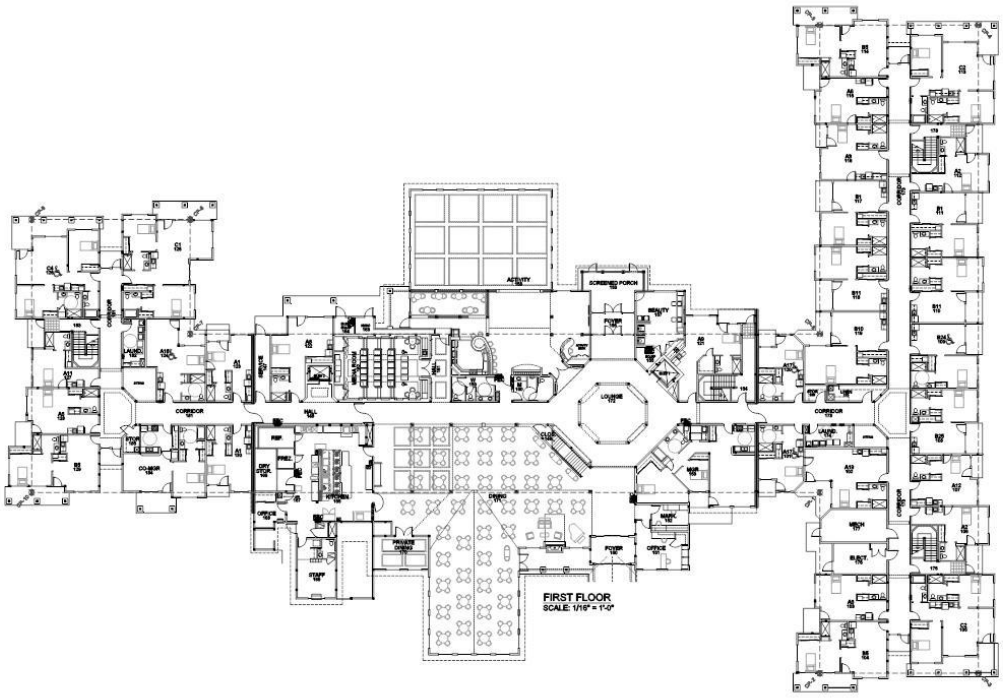
Portland Retirement Residence Overall Site Plan - excerpt



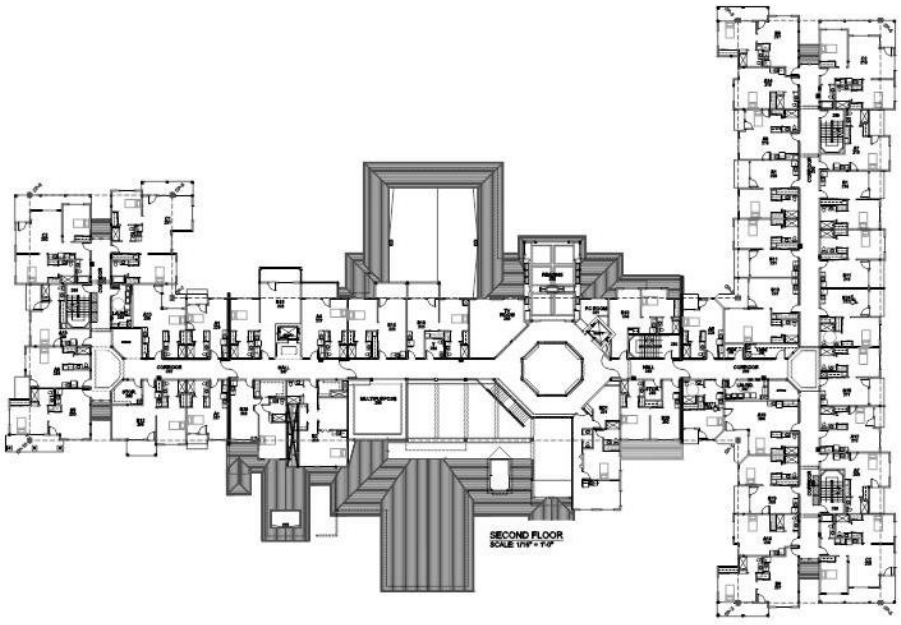
Portland Retirement Residence Landscaping Plan



Portland Retirement Residence Exterior Elevations



Portland Retirement Residence First Floor Plan



Portland Retirement Residence First Floor Plan

V. RIGHT, TITLE AND INTEREST; FINANCIAL & TECHNICAL CAPACITY & SUMISSION REQUIREMENTS

The application includes a purchase and sales agreement for the property. The applicant has submitted information pertaining to the development team credentials. The applicant has submitted a letter of financial capacity, which is included as Applicant's submittal Z.

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 (Applicant's submission- H). 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 is suggested that requires evidence that the easement has been recorded at the Cumberland County Registry of Deeds prior to the issuance of a building permit. A discussion of the trail and pedestrian connections is found under the environmental standards of this memo.

VI. ZONING ANALYSIS

The proposed use for the site is a congregate care facility, which is a permitted use in the R-5A zone. The total site has 798,184 sf and 443,875 sf of the site is located within the R-5A zone. As part of the application, the net residential density calculations are presented based upon the land area within R-5A. The deductions are as follows:

- Wetlands – 6,481 sf
- Slopes greater than 25% - 32,650 sf

The total amount deducted is 39,131 sf for a net area of 403,744 sf , which allows up to 252 units at 1,600 sf of land area per unit. The proposal is for 150 units, which is well within the maximum density.

The setbacks from the property boundaries are being met or exceeded. The garage on the southerly end of the site meets the side setback of 16 feet and the front setback of 25 feet. The building exceeds the zoning requirements with a side yard setback to the southerly line of 51.79 feet, front setback of 114.07 feet, and a rear setback to the R-5A line of 62.78 feet (the property boundary encompasses the ROS). All of the proposed setbacks to the northerly boundary exceed zoning standards.

The application includes exterior renderings show the building height at 47 ft 7 3/4 inches. The average finished grade shown on the plan is 134.57 feet. According to Mr. McSorley, P.E.

> Relative to question 2, the average finished grade of the 134.57 is shown on the elevation; it was just not dimensioned to for the height of the building. That elevation was arrived at because the doors are flush with the finished floor, the patio's are typically down 4" and the rest of the grading is down approximately 8". Therefore, we took the average as 4" below finished floor elevation. If you add that to the height shown, the height should be 47'- 11 ¾" in lieu of 47' – 7 ¾".

The proposed building complies with the maximum height requirements of the R-5A zone.

Fifty (50) vehicle parking spaces are required under zoning and 102 spaces are proposed. Ten bicycle parking spaces are required based upon the 50 required parking spaces for a non-residential structure. The applicant is seeking a partial waiver of the bicycle requirement to allow a rack for 4 to 6 bicycles.

VII. SITE PLAN REVIEW *(Section 14-526)*

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's site plan ordinance.

1. Transportation Standards

a. Impact on Surrounding Street Systems

The site has one point of access off Ocean Avenue. The applicant describes the use as a low traffic

generator in both overall trips and at peak hours and notes that the facility will be providing transportation services for their residents. The application includes a traffic generation assessment calculated for either the number of beds or by units. Tom Errico, P.E. Consulting Traffic Engineer has reviewed the analysis at the time of the workshop (Attachment 1) and found that the proposal does not trigger a Traffic Movement Permit:

- *The applicant conducted a trip generation analysis and I find the methods used to be acceptable. The project does not require a Traffic Movement Permit and would not be expected to have a significant impact on traffic operations and safety in the vicinity of the project.*

b. Access and Circulation

a. Site Access and Circulation
b. Loading and Servicing
c. Sidewalks

The 24 foot wide single driveway extends from Ocean Avenue to serve the facility. A porte - cochere is located at the main entrance of the building. The driveway extends around the southerly end of the building to the rear where loading and some parking is located along with a turn around to accommodate tractor trailer trucks. This lane also serves for fire access and for the final plan it was revised to extend farther to the rear of the building in order to meet the Assistant Fire Chief's comments for access to the northerly wing of the building. A sidewalk is shown along the westerly side of the access road, which wraps around the building and extends to the first parking lot. A public sidewalk is proposed on the easterly side of Ocean Avenue to fill a gap in the sidewalk system of approximately 393 feet.

Tom Errico, P.E. Consulting Traffic Engineer, has reviewed the revised plans (Attachment 2) has the following two recommended conditions of approval:

- *The applicant shall construct a crosswalk across Ocean Avenue that includes ADA compliant ramps, pavement markings and signs. The crosswalk shall be located between the proposed driveway and the driveway to Ocean Ridge. The applicant shall provide a plan for review and approval.*
- *The Ocean Avenue roadway width and alignment is not consistent in the area of the proposed driveway and the applicant shall revise the curb alignment design to provide a uniform roadway width. The applicant shall provide a revised plan for review and approval.*

For the preliminary review Mike Farmer, DPW reviewed the plans and requested additional information on the plans for the sidewalk along Ocean Avenue, particularly related to the street right-of-way widths, street monuments, and adjustments in the design to address ledge removal. The revised plans address Mr. Farmer's requests and David Margolis-Pineo, Deputy City Engineer, has approved the plans for the sidewalk improvements.

c. Public Transit Access

The site is not located on a designated bus route, so this standard does not apply.

d. Parking

a. Vehicle Parking
b. Location and number of Bicycle Parking Spaces

Parking for 102 vehicles is proposed. This includes 5 handicap spaces at the entrance. There are three garages proposed, which will house 16 vehicles and 2 vans. The remainder of the parking is located along the driveway or the lot to the north of the building. The

required number of spaces under zoning is 50 spaces. As requested, the applicant supplied additional information to justify the proposed parking on site, which Tom Errico, Consulting Traffic Engineer, found to be acceptable.

The applicant is seeking a partial waiver from the bicycle parking requirement, which the staff calculates would be 10 spaces. One bike rack near the building entrance is proposed, which could accommodate 4 to 6 spaces. Tom Errico, P.E. Consulting Traffic Engineer, has the following recommendation (Attachment 2):

- *I support a reduction in bicycle parking numbers given tenant characteristics and that some garage/storage areas will be provided. The applicant has proposed 4 to 6 bicycle racks and I would suggest 6 bicycle racks be provided for both employee and visitor usage.*

c. Snow Storage

Snow storage areas are shown as follows: a) two locations along the driveway to the northerly parking lot; b) A location near the southeasterly corner of the site; and c) an area at the rear of the site near the patio. At the workshop questions were raised regarding the location of the snow storage area near the southeasterly corner, in terms of the potential stormwater impacts. The applicant provided additional information and David Senus, Consulting Civil Engineer, and his comments are found below under the stormwater review.

e. Transportation Demand Management

The site plan standard for TDM is required for "all commercial or institutional uses of 50,000 sf or more of total floor area. The applicant is seeking a waiver from the requirement to prepare a TDM. The applicant's response is as follows:

> Level III Site Plans are required for project that would appear to have greater impacts because of their size, density or use. For most Level III Site Plans, transportation and traffic impacts would be those areas with the greatest impact. This project is unique in that transportation and traffic impacts are greatly reduced because of the use and the community transportation that is provided by the project. Accordingly, we hereby request a waiver from the Transportation Demand Management analysis typically required for Level III site plans."

As stated in the applicant's parking analysis 20% of the residents have cars, there are 16 staff members for the largest shift, 20% of the residents have visitors. The applicant also provides van transportation for the residents. Tom Errico, Consulting Traffic Engineer, supports granting the waiver (Attachment 2).

2. Environmental Quality Standards

a. Preservation of Significant Natural Features

b. Landscaping and Landscape Preservation and Site Landscaping

As noted above, the 18.33 acre parcel is divided by two zones, Residential R-5A and Recreation Open Space. The development will occur on the R-5A portion of the site and it is estimated that 5.46 of the 10.17 acres will be maintained in a natural state. The ROS land consists of wetlands and forested uplands. Trails are found throughout the area and will be preserved for public use with the easement between the applicant and Portland Trails. Along the boundary of the ROS and R-5A zones is a ridge with Portland's highest point along the coast called West Graves at an elevation of 170 NAVD.

The Department of Agriculture, Conservation and Forestry found there are no rare botanical

features documented within the project area. Maine's Department of Inland Fisheries and Wildlife confirmed that there are no essential habitats or fisheries on the site. The Department did note that four species of bats are listed as Special Concern. The August 25th letter from John Perry states the following:

> 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. Therefore, we recommend that you contact and will defer to any guidance and recommendations provided by the U.S Fish and Wildlife Service Maine Field Office….

The Department confirmed that there are no identified significant habitats on the site, but recommended that "surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area."

Planning and David Senus asked about the status of the stream, vernal pool evaluation, and bat habitat analysis. Robert McSorley, Applicant Representative, responded on October 23, 2015 with the following status report (Attachment 13) to address these questions:

> To answer your questions and some others that were raised during the peer review, we offer the following. First, the drainage course through the project was reviewed by MDEP several years ago and we have a written determination that it is not a stream by MDEP definitions (copy attached). The project has been planned and designed to preclude any impacts to jurisdictional wetlands. Therefore, there is no federal (ACOE) jurisdiction relative to wetland impacts since there are none. Relative to MEIFW's letter, the wetlands were reviewed and mapped by our wetland scientist and there were no significant vernal pools identified. Therefore, there is no MDEP jurisdiction review relative to wetlands or vernal pools required.
>
> Relative to the bat habitat, this is a new issue that has been raised by the listing of the northern long-eared bat by the Federal Government. In order to avoid a **potential** "take" of the bats, the current guidance is to not impact **potential** habitat during the roosting, breeding and migratory periods for the bats. The period for the bats to be in hibernation in their hibernacula has been established as October 15 to April 20. If we were jurisdictional to ACOE, based upon clearing during this time frame, the ACOE "…would make a 'may effect but not likely to adversely effect' determination…" relative to the bats. We have told our client that the project would therefore require tree clearing to occur during the October 15 to April 20 time frame.

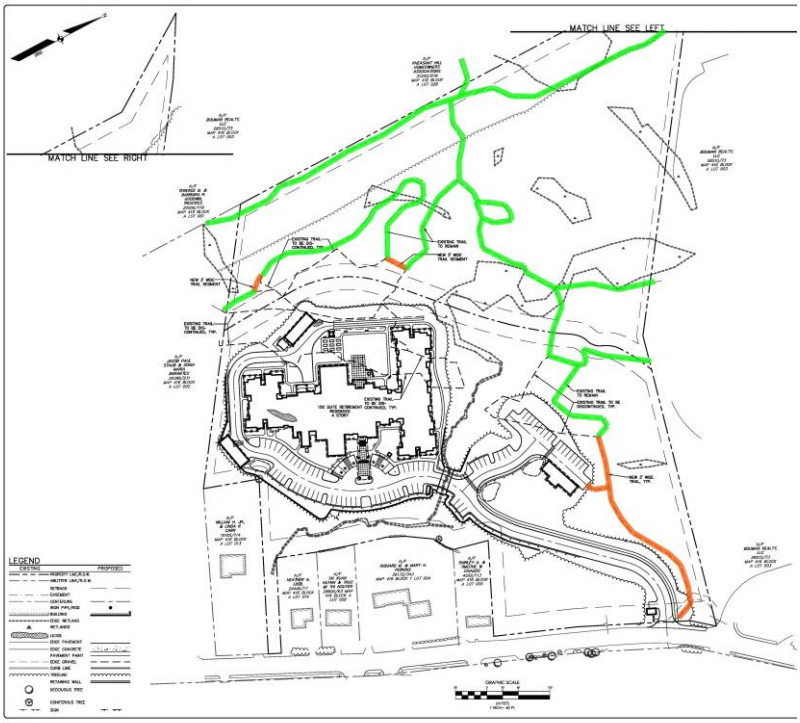
The applicant is meeting the standards of review for preserving natural features and preserving existing landscaping.

The applicant is collaborating with Portland Trails on connections between the sidewalk and the trail system. There is a trail connection near Ocean Avenue and there is a sidewalk along the access road. The plan now includes a trail connection from the northerly end of the first parking lot, which is intended to provide access for residents to the trail system. The steep slopes of the site pose a challenge to find acceptable routes and the applicant's representative has stated that this option avoids steep grades. Below is the revised trail map, which was shared with Portland Trails and Jaime Parker found the plan acceptable. He offered some other possible connections (one of which would be at the steep slope that is not visible on the trail plan) and stated the following:

> Attached is my sketch with a couple suggested locations that use existing trails. I see where they have shown a connection on the revised plan...which is fine except people won't likely want to walk a circuitous route through/along a parking lot to

get to the trail. That said, I think the best thing is not to worry about it now - Rob and I can field locate if they want to make any other connections. I suspect residents may establish their own trails along logical routes which may not be obvious now.

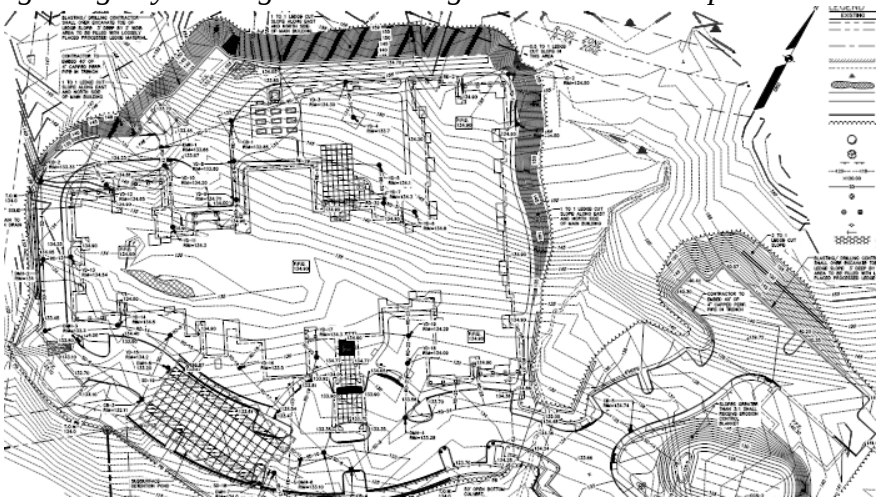
Portland Trails is fine with the plan as shown.



(green=existing trails and orange=new connections).

Jeff Tarling, City Arborist has reviewed the trail plan. There are two existing trails that currently lead to an area where an escarpment will be created with a 1 to 1 slope, as shown on the grading plan (excerpt below). The trails are to be rerouted, but for the public safety, Jeff is recommending some signage, fencing or other methods be installed to discourage walkers from going to the edge of steep slope:

due to the steep cut slopes the project should address the potential risk of fall from the wooded trail or north side. This could consist of wire 'Ag' fencing & / or caution signage, along disguising any existing trails that might lead to the escarpment.



Excerpt of grading plan

A landscaping plan is included in the applicant's submission (Applicant's submission Plans 19 and 20). Jeff Tarling, City Arborist, has submitted his review of the proposed landscaping plan (refer to Attachment 10 for the preliminary plan and Attachment 11for his final review). Jeff Tarling has found that the revised plans meet the standards and addressed his initial comments. He states the following:

> *I talked to the landscape architect last week and approve the response revisions.*
>
> *Second, proposed landscape treatment near the ledge cut area may present grow space challenges due to shallow soil depths. The landscape plan is good as proposed, if an alternative plan is needed for these areas after site work is conducted an amended landscape plan should be generated early on vs at the end of construction phase.*

d Water Quality/Storm Water Management/Erosion Control

Management of the stormwater from this steep site has been a significant topic during this review. David Senus (Attachment 3) and Mike Farmer (Attachment 7) provided recommendations for revising the system to address neighborhood concerns when this development came before the Board for a workshop. At the workshop for the development plan, additional concerns were raised by Mr. Staub, an abutting land owner. A meeting was held with Mr. Jacob Staub and Mr. Perkins on November 6, 2015, to discuss the applicant's stormwater management plans and to better understand the neighbors' concerns. The participants in that meeting included Robert McSorley, Sebago Technics, David Senus, Woodard and Curran, Mike Farmer, DPW, and Barbara Barhydt, Planning.

After that meeting, Mr. McSorely, provided additional stormwater modeling information to Mr. Staub (e-mails from both Mr. Staub and Mr. McSorely are included as Attachments 5 and 6 with the attachments to Mr. Mc Sorley's e-mail included as part of the applicant's submission). Sebago Technics has revised the stormwater plan since the workshop and incorporated the staff recommendations received at the preliminary plan stage and from the discussion on November 6th. The final plan submission included revised stormwater plans and additional documentation as follows:

- Response Letter (Applicant's Submittal- Documents AA)
- Revised Section 13 Stormwater Report (Applicant's Submission – Documents CC)
- Stormwater Peaks (Applicant's Submission – Documents DD)
- Chapter 500 Rainfall Events (Applicant's Submission – Documents EE)
- FF Type III Depth (Applicant's Submission – Documents FF)
- Type III Intensity (Applicant's Submission – Documents GG)
- Revised Grading and Drainage Plan (Plan 6)
- Revised Stormtech Stormwater Detail (Plan 10)
- Revised Pre Development Watershed Plan (Plan 12)
- Revised Post Development Watershed Plan (Plan 13)

Attachment 4 is the December 3, 2015 review prepared by David Senus, PE. He finds the revised plans are in compliance with the applicable City and State Stormwater Management standards for the design of the site and the associated Stormwater Systems. He notes that in the preliminary plan stage:

> "…discharge from the site would exceed pre-development conditions for the 25-year, 24 hour storm event by approximately 1%, which would have required a waiver from the City's Flooding Standard; however, the revised application includes a modification to the outlet of the Underdrained Soil Filter system to hold back more discharge during the event peak. The result being that the project is now fully compliant with the City's Flooding standard; effectively, the post-development discharge condition will be at or below the pre-development discharge condition for the 2-, 10-, and 25-year, 24-hour storm events."

David Senus finds that all of his previous comments were adequately addressed with the revised plans. He does note that the project will require the applicant to obtain a Maine Construction General Permit, which is provided as a condition of approval. Lastly, a question was raised regarding the location of one of the snow storage areas near the southeast corner of the site. In Mr. Senus' review he states:

> In discussions with the Applicant's Engineer, we understand that the design intent is to direct drainage from this area to the nearby catch basin (CB-3) to receive treatment in the subsurface sand filter. We recommend that final plans include a note or additional spot grades / flow arrows in this area to ensure that the finish grade is constructed to match the design intent. Additionally, it appears that the Landscape Planting Plan (A-1.3a) proposes trees at this and other snow storage locations; we recommend that the Landscaping Plan be updated with consideration for the proposed snow storage locations.

A condition of approval is proposed that addresses his recommendations.

David Margolis-Pineo has reviewed the final plan and found the plans satisfied all of the Departments comments (Attachment 14).

3. Public Infrastructure and Community Safety Standards

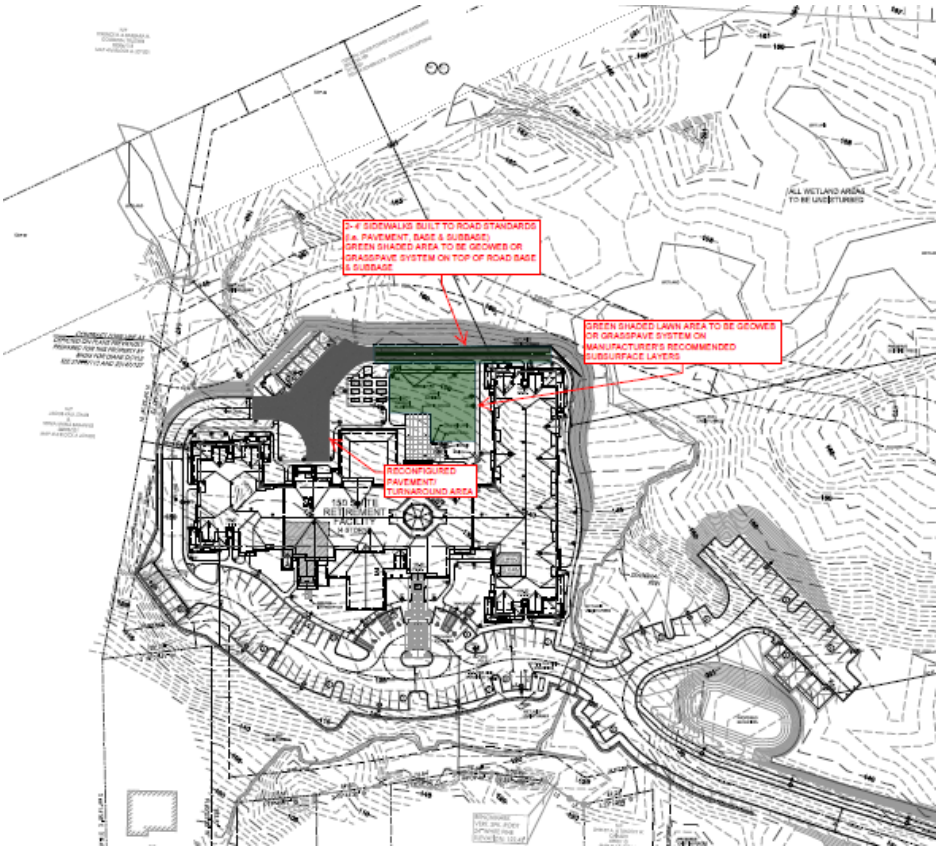
a. Consistency with Master Plans:
There are no adopted master plans for the Ocean Avenue area. The applicant has provided a detailed statement of compliance with the comprehensive plan in (Applicant's submission O). The proposal is consistent with the Comprehensive Goals for more senior citizen housing options.

b. Public Safety and Fire Prevention
Assistant Chief Keith Gautreau, reviewed the preliminary plans for the workshop on 10/7/15 (Attachment 8) and provided the following comments:

1. I need some information in regards to emergency vehicle access to the West Wing or West side of the proposed 4 story structure.
2. I need information in regards to hydrants, locations, and how they will achieve adequate pressure for fire protection throughout the proposed structures, i.e. pump houses, etc. The applicant should work with the Portland Water District to achieve adequate water supply & pressure to the site.
3. Any Blasting will require the appropriate permits and approvals.

Assistant Chief Gautreau and Barbara Barhydt met with Mr. McSorely on October 21st to discuss the possible options for fire access to the northwesterly wing of the building. The final plans show the fire access lane extended to the rear of that wing and the outside patio has reinforced pavers to support the weight of a fire truck. A maintenance plan was submitted for review for the long term maintenance of the pump station (located at the intersection of the access road and Ocean Avenue), which is needed to provide adequate water pressure for emergencies.

Assistant Chief Gautreau reviewed the revised material (Attachment 9) and found that the plans address his comments and meet the city standards. He does recommend that a condition of approval be considered that states the pump station and hydrant shall be maintained as presented in the "Yearly Fire System Maintenance for Hydrant and Pump Facility" as presented in the supplemental fire information (Applicant's Submittal JJ).



At the workshop, concerns about blasting were raised. Portland regulates blasting under Article VIII of the Land Use Code, Regulations of Explosives. The Fire Department reviews blasting plans, which must address the proposed operation, estimated schedule, duration of blasting, complaint protocols and noticing to property owners.

Assistant Chief Gautreau suggests the following conditions of approval in his reviews on from 11/17 and 12/1:

> The maintenance agreement submitted with the packet shall be a condition of the site plan approval as well as a condition of the building permit approval process.
>
> Any Blasting will require the appropriate permits and approvals.

c. Availability and Capacity of Public Utilities

The Portland Water District has issued a letter on December 9, 2014 stating their ability to serve this project. There is sufficient pressure for domestic usage. The project will have a private pump station near the mouth of the driveway, which will provide sufficient pressure for fire protection and a private hydrant will be located on site near the structure.

The Department of Public Services has issued a letter on November 24, 2014, stating the ability to serve the wastewater flows for this project and reconfirmed the capacity with the additional living units on October 21, 2015 (Attachment 6). David Margolis-Pineo indicated that the revised plans adequately address Mike Farmer's preliminary review comments.

4. Site Design Standards

a. Massing, Ventilation, and Wind Impact

The applicant submitted the following response:

The proposed building is sufficiently setback from property lines and adjacent neighboring buildings such that the building will have minimum adverse effects on these adjacent facilities. The project uses individual heating/cooling systems for the suites that do not produce emissions. Other mechanical equipment will be located away from the property lines and meet the applicable state and federal emission standards.

b. Shadows

The applicant submitted the following response:

> The proposed building is such that the highest elevations will be at approximately the same elevations as the nature canopies on the site at the proposed location of the building. Based upon the nature of the sun position in Maine, it is expected that the greatest impacts from shadows would be to the west, north and east of the building. In each of the directions, because of the proposed height being at about the height of the natural canopies and the placement of the building, the building will not cast significant shadows onto neighboring properties.

c. Snow and Ice Loading

Snow storage areas were discussed above and a condition of approval is proposed to assure that the snow melt is directed to the appropriate catch basin. No impacts of snow or ice loading are anticipated with the site.

d. View Corridors

The proposed building is designed to fit into the site and to minimize impacts on the shadows and views of adjoining property owners. The preservation of the highest point with access from trails preserves a view, but it is not a regulated view corridor under the city's ordinance.

e. Historic Resources

The Maine Historic Preservation Commission confirmed there are no historic resources impacted by this development.

f. Exterior Lighting

As noted in the application, all the exterior site lighting will be LED fixtures with full cut off type fixtures. Up-lighting of a flagpole is proposed, which is permissible under the City's regulations. The photometric plan is in compliance with the City's standards. In general, the proposed light fixtures meet the city standards; however there a few details that are not full cut off fixtures. It is possible that these fixtures are to be used in within the building or enclosed areas, which is permissible. A condition of approval is suggested that seeks to have the plans clearly indicate that all exterior lights will be full cut off fixtures.

g. Noise and Vibration

The applicant states that the mechanical systems will be energy efficient with individual heating /cooling units in each suite. The mechanical equipment for the common areas and the emergency generator will be located in isolated areas and meet applicable emission standards. The manufacturers specifications for the mechanical equipment must be submitted for final review prior to the issuance of a building permit.

h. Signage and Wayfinding

All signage will require a sign permit under the zoning ordinance.

i. Zoning-Related Design Standards

There are no specific design standards for this site. There is the general standard for residential projects; which includes special needs housing. This is a congregate care facility and not a multifamily development as defined. The elevations are presented in the applicant's submission along with color boards for the facility (Section 22 of Applicant's submission).

5. Construction Management Plan

A construction management plan was submitted. David Senus noted:

> The project will disturb more than one acre of land, therefore a Notice of Intent (NOI) to Comply with the Maine Construction General Permit must be filed with the MaineDEP. A copy of this NOI should be forwarded to the City Planning Office prior to the start of construction.

The site is steep with a lot of ledge and removal or blasting of ledge will be required. As noted by Assistant Chief Keith Gautreau, above, a blasting plan meeting the City's regulations for review and approval by the Fire Department is required.

VIII. STAFF RECOMMENDATION

The Planning Staff recommends approval of the site plan subject to the recommended conditions of approval.

IX. PROPOSED MOTIONS

A. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the planning board report for the public hearing on December 8, 2015 for application 2015-164 relevant to Portland's site plan ordinance and 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 waiver criteria of Section 14-526 4.b. ii and the recommendation of the Consulting Traffic Engineer, the number of bicycle parking spaces may be reduced due to the reduced demand for elderly residents. The Planning Board **waives/does not waive** the bicycle space requirement from 10 to 6 spaces.

2. Based on the fact that the Portland Retirement Residence is a congregate care facility that provides transportation services for the residents and on the Consulting Traffic Engineer's positive recommendation to waive this standard and, the Planning Board **finds/does not find,** that extraordinary conditions exist or undue hardship may result from strict compliance with the site plan standard Section 14-526 5. Transportation Demand Management (TDM) and **waives/does not waive** this requirement.

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 December 8, 2015 for application 2015-164 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. The applicant shall submit evidence that the easement to Portland Trails has been recorded at the Cumberland County Registry of Deeds.

2. The applicant shall revise the trail plan to address trail safety concerns with fencing, caution signage or other means to minimize the potential risk of fall from the existing wooded trail along the north side of the site for review and approval by the City Arborist and Planning Authority.

3. The applicant shall construct a crosswalk across Ocean Avenue that includes ADA compliant ramps, pavement markings and signs. The crosswalk shall be located between the proposed driveway and the driveway to Ocean Ridge. The applicant shall provide a plan for review and approval by the Traffic Engineer and Planning Authority.

4. The Ocean Avenue roadway width and alignment is not consistent in the area of the proposed driveway and the applicant shall revise the curb alignment design to provide a uniform roadway width. The applicant shall provide a revised plan for review and approval by the Traffic Engineer.

5. The applicant shall obtain a Notice of Intent (NOI) to Comply with the Maine Construction General Permit must be filed with the MaineDEP. A copy of this NOI should be forwarded to the City Planning Office.

6. The applicant shall submit revised final grading plans that include a note or additional spot grades / flow arrows in the area of the proposed snow storage area near the southeasterly corner of the site to ensure that the finish grade is constructed to direct the water to the nearby catch basin (CB-3) to receive treatment in the subsurface sand filter for review and approval by the Consulting Civil Engineer. In addition, a revised final Landscape Planting Plan that takes into consideration the proposed snow storage locations be submitted for review and approval by the Consulting Civil Engineer and City Arborist.

7. The pump station and hydrant shall be maintained as presented in the "Yearly Fire System Maintenance for Hydrant and Pump Facility" as presented in the supplemental fire information submitted for the application.

8. Any proposed blasting on the site shall require the appropriate permits and approvals under Article VII Regulation of Explosives of Portland's Land Use Code and the blasting regulations contained in the Technical Manual.

9. The manufacturers specifications for the mechanical equipment must be submitted for final review prior to the issuance of a certificate of occupancy.

10. The applicant shall obtain all required sign permits for any proposed signage under the zoning ordinance.

11. All exterior light fixtures, except for the lighting of the flag pole, shall be full cut off fixtures.

ATTACHMENTS:

Report Attachments

1. Traffic Engineer Review Comments – Tom Errico, - October 22, 2015
2. Traffic Engineer Review Comments – Tom Errico – December 3, 2015
3. Civil Engineer Review Comments – David Senus- October 14, 2015
4. Civil Engineer Review Comments – David Senus – December 3, 2015

5. Jacob Staub – e-mail
6. Robert McSorley - email
7. DPS Comments – Mike Farmer – October 19, 2015
8. Fire Department Preliminary comments- Assistant Fire Chief Keith Gautreau – Oct. 7, 2015
9. Fire Department comments – Assistant Fire Chief Keith Gautreau – November 17 and December 1
10. City Arborist comments – Jeff Tarling
11. City Arborist Comments – Jeff Tarling – December 3, 2015
12. Sewer Capacity - David Margolis-Pineo – October 21, 2015
13. E-mail – Robert McSorely – October 23, 2015
14. DPW final comments – David Margolis- Pineo – December 4, 2015

Public comments

PC 1 Neighborhood Packet submitted by Applicant on October 8. 2015
PC 2 Neighborhood Presentation

Applicant's Submittal

A. Cover Letter
B. Application Forms
C. Location Map
D. Tax Map
E. Right, Title and Interest
F. State of State and Federal Permits
G. Zoning Assessment
H. Summary of Existing/Proposed Easements
I. Waiver requests
J. Evidence of Financial and Technical Ability
K. Construction Management Plan
L. Traffic Report
M. Singificant Natural Features
N. Stormwater Management Plan
O. Consistency with City Master Plans
P. Ability to Serve Letters
Q. Solid Waste Generation
R. NFPA 1/Fire Department Standards
S. Consistency with Design Standards
T. Mechanical Equipment
U. Soils Report
V. Typical Unit Plans
W. Site Elevations and Color Board
X. Site Construction/Landscape Plans
Y. Lighting Cut Sheets/Lighting Plans
Z. Financial Capacity Letter
AA. Response Letter
BB. Revised Application Forms
CC. Revised Section 13 Stormwater Management
DD. Stormwater Peaks
EE. Chapter 500 Rainfall Events
FF. Type III Depth
GG. Type III Intensity
HH. Section 25 Parking Justification
II. Section 26 Supplemental Fire Dept Information
JJ. Section 27 Sewer Flow Calculation

Plan Set

Plan 1 Cover Sheet
Plan 2 Survey – sheet 1
Plan 3 Survey – Sheet 2
Plan 4 Overall Site Plan
Plan 5a Site Plan
Plan 5b Site Plan
Plan 6 Grading and Drainage Plan
Plan 7 Utility Plan
Plan 8 Box Culvert Plan
Plan 9 a Details – Sheet 1
Plan 9 b Details – Sheet 2
Plan 9 c Details – Sheet 3
Plan 9 d Details – Sheet 4
Plan 10 Stormtech Details
Plan 11 Sidewalk – Ocean Avenue
Plan12 Pre-Dev Watershed
Plan 13 Post-Dev Watershed
Plan 14 Electrical
Plan 15 Site Lighting Photometric -Parking
Plan 16 Site lighting
Plan 17 Lighting Details
Plan 18 Exploration Location Map
Plan 19 Landscaping Sheet 1
Plan 20 Landscaping Sheet 2

Plan 21 Fire Access Details
Plan 22 Firelane Sketch
Plan 23 Ocean Avenue Trails
Plan 24 sitexref- big
Plan 25 First Floor
Plan 26 Second Floor
Plan 27 Third Floor
Plan 28 Fourth Floor
Plan 28 Elevations

From: Tom Errico <thomas.errico@tylin.com>
To: Barbara Barhydt <BAB@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>
Date: Thursday, October 22, 2015 9:48 AM
Subject: 802 Ocean Avenue - Preliminary Traffic Comments

Barbara - I have reviewed the application materials and the following summarizes my preliminary traffic comments.

* The applicant conducted a trip generation analysis and I find the methods used to be acceptable. The project does not require a Traffic Movement Permit and would not be expected to have a significant impact on traffic operations and safety in the vicinity of the project.

* I generally find the Ocean Avenue Sidewalk design to be acceptable. I need to investigate a need for a crosswalk across Ocean Avenue and I will coordinate with DPS on this issue. I would note that if a crosswalk is desired, it will need to be coordinated with pedestrian crossings from Ocean Ridge. Plans note that the centerline is being changed. Specific details on the change and lane width of Ocean Avenue shall be provided.

* In general, I find the site circulation and the parking layout to be acceptable. I would note that the sidewalk from the easterly parking lot is indirect and the preference would be to have the sidewalk on the building side of the roadway.

* The applicant should provide a detailed parking analysis that supports the project supply.

* Bicycle racks should be provided for the site to serve employees, guest, and residents that may bike.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
[T.Y. Lin International]T.Y. Lin International
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From: Tom Errico <thomas.errico@tylin.com>
To: Barbara Barhydt <BAB@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>
Date: Thursday, December 03, 2015 9:11 AM
Subject: 802 Ocean Avenue - Final Traffic Comments

Barbara - I have reviewed plans and project information and I find the project to be acceptable from a traffic perspective with the following comments.

* The applicant shall construct a crosswalk across Ocean Avenue that includes ADA compliant ramps, pavement markings and signs. The crosswalk shall be located between the proposed driveway and the driveway to Ocean Ridge. The applicant shall provide a plan for review and approval.

* The Ocean Avenue roadway width and alignment is not consistent in the area of the proposed driveway and the applicant shall revise the curb alignment design to provide a uniform roadway width. The applicant shall provide a revised plan for review and approval.

* I support a reduction in bicycle parking numbers given tenant characteristics and that some garage/storage areas will be provided. The applicant has proposed 4 to 6 bicycle racks and I would suggest 6 bicycle racks be provided for both employee and visitor usage.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
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MEMORANDUM

TO: Barbara Barhydt, Development Review Services Manager
FROM: David Senus, PE
DATE: October 14, 2015
RE: Portland Retirement Residence at 802 Ocean Ave, Level III Site Plan Application

---

Woodard & Curran has reviewed the Level III Site Plan Application for the proposed Portland Retirement Residence located at 802 Ocean Avenue in Portland, Maine. The project involves the construction of a 150 unit Congregate Care Facility with associated parking and loading, landscaping, and stormwater management systems.

Documents Reviewed by Woodard & Curran

- Level III Site Plan Application and attachments, dated September 17, 2015, prepared by Sebago Technics, on behalf of the Hawthorne Retirement Group.
- Engineering Plans, Sheets 1-16, dated September 17, 2015, prepared by Sebago Technics, on behalf of the Hawthorne Retirement Group.

Comments

1) The Applicant has provided letters from utilities confirming capacity to serve the proposed development.
2) The project will disturb more than one acre of land, therefore a Notice of Intent (NOI) to Comply with the Maine Construction General Permit must be filed with the MaineDEP. A copy of this NOI should be forwarded to the City Planning Office prior to the start of construction.
3) The Applicant should discuss whether the proposed driveway culvert crossing of the small wetland channel will require any permitting action by the MaineDEP or USACOE; has the channel been reviewed to determine if it should be characterized as a stream?
4) In a letter contained in the application, the Maine Department of Inland Fisheries and Wildlife recommended conducting vernal pool surveys within the project boundary by a qualified wetland scientist prior to final project design to determine whether there are Significant Vernal Pools present in the area. Has this occurred and if so, were any significant vernal pools identified on the site?
5) 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. In addition, the project will result in greater than 1 acre of new impervious area, and is therefore subject to review under MaineDEP Chapter 500 standards. We offer the following comments:
    a) Basic Standards: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in general accordance with Appendix A, B, & C of MaineDEP Chapter 500; however the following items should be addressed:
        i. The grading and drainage plan should specify locations for proposed sediment barriers downgradient of the proposed work, particularly along the southern side of the disturbed project area.
        ii. Details, notes and plan callouts should be included describing temporary or permanent stabilization measures on steep slope areas (greater than 3:1) such as erosion control matting, rip rap, or other measures (this comment is not applicable to ledge cut areas where the finish surface will be exposed ledge).
        iii. A significant amount of earthwork will be occurring at the site, with large quantities of materials removed from and imported to the site. Staging and access along Ocean Avenue will be an important consideration and should be outlined in a detailed construction management plan prior to the start of construction. Additional notes should be added to the current plans with requirements for monitoring and sweeping of Ocean Avenue throughout the duration of

construction to ensure the Right-of-Way is properly maintained with minimal dust and minimal tracking of materials.

b) General Standards: The project will result in an increase in impervious area of approximately 2.9 acres. As such, the project is required to include stormwater management features for stormwater quality control. The Applicant has proposed a Subsurface Sand Filter and Underdrained Soil Filter system. Both systems are generally compliant with the requirements of the General Standards; however, several comments must be addressed as follows:
   i. Stormwater quality calculations included in the application account for 124,410 SF of new impervious area, which differs from the 127,631 SF reported on the project data sheet. The Applicant should clarify.
   ii. The Exploration Location Plan prepared by SW Cole indicates that no borings have been conducted in the areas of the proposed Subsurface Sand Filter and Underdrained Soil Filter. Soil exploration should be conducted in these areas per the MaineDEP Stormwater BMP Manual to verify depth to groundwater and bedrock, or appropriate provisions should be taken with these system to anticipate the possible presence of bedrock and groundwater in the excavation.
   iii. In reference to the Subsurface Sand Filter, per Chapter 7.3 of Volume III of the MaineDEP Stormwater BMP Manual, the overflow outlet shall not be located below the elevation of the storage depth of the water quality volume (in other words, the treatment volume must be discharged solely through an underdrain sand bed and underdrain pipe system). As proposed, the 15" overflow outlet is below the peak depth of the water quality volume.

c) Flooding Standard: The project will result in an increase in impervious area of approximately 2.9 acres. As such, the project is required to include stormwater management features to control the rate of stormwater runoff from the site. The subsurface storage system and underdrained soil filter system are proposed to temporarily detain runoff on the site, and to discharge runoff at a rate that is at or below the existing condition. The Applicant has noted that there is a minor increase in the peak discharge rate from the primary study point (SP-1) in the 25-year storm event (0.4 cfs, or less than a 1% increase); with other storm events at or below the existing condition. These model results would indicate that the project is largely compliant with the Flooding Standard, however, several comments should be addressed as follows:
   i. The models utilize inconsistent sheet flow lengths and time of concentration measurements for certain unchanged areas of the site when evaluating the pre- and post-development conditions. The models should be revised to utilize a consistent approach in the pre- and post-development condition with regard to determining Time of Concentration in all subcatchment areas.
   ii. The plans and model should be checked to ensure consistent orifice dimensions and invert elevations for the Subsurface Sand Filter and Underdrained Soil Filter. For instance, within the model, Pond 210P: Sand Filter mc3500 includes a 1.0" Vert. Orifice/Grate X 2.00 at elevation 121.00'; however, the detail shows three of these 1.0" orifices at elevation 121.87. Also within the model, Pond 220P: UDF includes a 0.9" Vert. Orifice/Grate (Device 1) at elevation 122.83'; however, this does not appear to be consistent with the details for the underdrained soil filter basin or OCS-2.
   iii. Sheet 6 of 14 – Discharge pipe SD 17 from CB-7 and the Underdrained Soil Filter discharge to a level spreader that, based on the downhill topography, could result in additional flow running onto a neighboring property. This outlet pipe and level spreader should be repositioned to the east of the currently proposed location such that flow below the discharge will remain on the project property prior to entering into the ROW.
   iv. Based on the findings of the geotechnical engineering report, high groundwater conditions exist at the site. Given the large "cut" into the existing grade at the site and the perimeter foundation drains proposed around the building, the Applicant and their geotechnical engineer should comment on what level of base flow may be anticipated from the foundation drain

system discharging into the drainage channels. The discharge from the foundation drain system should be factored into the stormwater model. Also, the foundation drain outlet depicted on Sheet 6 of 14 may be in conflict with the corner of the subsurface sand filter system; the Applicant should verify.

6) StormTech recommends providing additional access structures when Isolator Rows exceed 50-feet. The Applicant should verify that the design, as proposed, provides adequate means of access for inspection and maintenance of the system through communication/verification by Stormtech.
7) The Grading and Drainage Plan should be revised to indicate the location of the spillway for the Underdrained Soil Filter.
8) Sheet 6 of 14 – A drain manhole should be provided for the 12" storm drain connection into the 18" storm drain in Ocean Ave. The storm drain pipe material should be identified to meet City Standards within the roadway right-of-way (Technical Manual Section 2.5.2).
9) Sheet 14 of 14 - The proposed sidewalk along the south edge of Ocean Avenue has several angles in the layout to avoid an adjacent slope and utility poles. These angles should be smoothed out as radius transitions to follow a "desire line" of travel.

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MEMORANDUM

TO: Barbara Barhydt, Development Review Services Manager
FROM: David Senus, PE
DATE: December 3, 2015
RE: Portland Retirement Residence at 802 Ocean Ave
Final Level III Site Plan Application & Response to Comments Submittal

---

Woodard & Curran has reviewed the Final Level III Site Plan Application and Response to Comments Submittal for the proposed Portland Retirement Residence located at 802 Ocean Avenue in Portland, Maine. The project involves the construction of a 150 unit Congregate Care Facility with associated parking and loading, landscaping, and stormwater management systems. The project will disturb approximately 5 acres of land area and will result in the creation of approximately 2.9 acres of new impervious area.

Review of this project has been conducted under the City's Delegated Review Authority for MaineDEP Chapter 500 (Stormwater Law) standards in addition to conformance with Section 5 of the City's Technical Manual, and other applicable City ordinances and standards related to water quality and construction standards.

Final/Revised Documents Reviewed by Woodard & Curran

- Response to Comments Letter prepared by Sebago Technics on behalf of the Hawthorne Retirement Group, dated November 20, 2015.
- Application Section 1 (Application Form) and Section 13 (Stormwater Management Plan), revised November 20, 2015.
- Revised Engineering Plans, Sheets 4, 5, 6, 7, 9, 11, 13, 14 and revised Pre/Post Development Watershed Plans, Rev. dated November 20, 2015, prepared by Sebago Technics, on behalf of the Hawthorne Retirement Group.

Discussion

On November 6, 2015, David Senus of Woodard & Curran attended a meeting to discuss the stormwater-related elements of the project with the Applicant's Engineer, Rob McSorley of Sebago Technics, the review engineer from the Portland Department of Public Works, Mike Farmer, and the project Planner & Development Review Services Manager from the Portland Planning Division, Barbara Barhydt. Also in attendance at this meeting were two abutters to the project site, Mr. Staub and Mr. Perkins, each of whom had specific questions related to stormwater management. During the meeting we reviewed the October 14, 2015 memorandum from Woodard & Curran, along with specific questions raised by Mr. Staub and Mr. Perkins, some of which were summarized in an email from Mr. Staub dated October 30, 2015. Rob McSorley of Sebago Technics reviewed each of the comments/questions that were raised and summarized their anticipated approach to addressing each of these comments. Some of the questions raised by Mr. Staub related to the inner workings of the HydroCAD model; essentially the background model outputs at specific nodes over specific time intervals, which are summarized in the data included in the Applicant's Stormwater Management Plan. Mr. Staub also had specific questions related to design storm events, specifically rainfall intensity distributions during certain storm events.

Following that meeting, Rob McSorley sent an email to the meeting attendees dated November 6, 2015 with the additional information requested by Mr. Staub. Also following that meeting, Sebago Technics provided a response to comments letter, revised application sections (including a revised Stormwater Management Plan), and revised Engineering Plans, as listed above, to address comments raised by staff and development review consultants. This memorandum identifies our comments and findings associated with our review of the overall final application, including the response to comments

submittal. Overall we find that the Applicant is compliant with applicable City and State Stormwater Management Standards for the design of their site and the associated Stormwater Management systems. We have noted this within the "Findings" section of this memorandum.

It should be noted that the original application submittal indicated that discharge from the site would exceed pre-development conditions for the 25-year, 24-hour storm event by approximately 1%; which would have required a waiver from the City's Flooding Standard; however, the revised application includes a modification to the outlet of the Underdrained Soil Filter system to hold back more discharge during the event peak. The result being that the project is now fully compliant with the City's Flooding Standard; effectively, the post-development discharge condition will be at or below the pre-development discharge condition for the 2-, 10- and 25-year, 24-hour storm events. This change can be seen on Sheet 11 of 14 (Rev. date 11/20), Underdrain Soil Filter Basin detail, Pond Dimensions Table, {addition of} Orifice Diameter "N"; along with the resultant changes to the HydroCAD model output.

Comments

1) All previous review comments for this project contained in the Memorandum from Woodard & Curran to the City of Portland, dated October 14, 2015, have been adequately addressed by the Applicant.
2) The project will disturb more than one acre of land, therefore a Notice of Intent (NOI) to Comply with the Maine Construction General Permit must be filed with the MaineDEP. A copy of this NOI should be forwarded to the City Planning Office prior to the start of construction. This requirement has been acknowledged by the Applicant.
3) As part of the October 21, 2015 Planning Staff Memorandum to the Board, concern was raised regarding the snow storage location proposed on the Site Plan south of the Retirement Residence building, and just east of a "6 Car Garage" structure (described as "southeasterly corner of the site"). In discussions with the Applicant's Engineer, we understand that the design intent is to direct drainage from this area to the nearby catch basin (CB-3) to receive treatment in the subsurface sand filter. We recommend that final plans include a note or additional spot grades / flow arrows in this area to ensure that the finish grade is constructed to match the design intent. Additionally, it appears that the Landscape Planting Plan (A-1.3a) proposes trees at this and other snow storage locations; we recommend that the Landscaping Plan be updated with consideration for the proposed snow storage locations.

Findings

1) The project will disturb greater than 1 acre of land area and will result in greater than 1 acre of new impervious area, yet less than 3 acres of overall impervious area; therefore the project is subject to the requirements of MaineDEP Chapter 500, specifically conformance with the Basic and General Standards. In addition, per 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 Standards: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in general accordance with Appendix A, B, & C of MaineDEP Chapter 500.
   b) General Standards: The project will result in an increase in impervious area of approximately 2.9 acres. As such, the project is required to include stormwater management features for stormwater quality control. The Applicant has proposed a Subsurface Sand Filter and Underdrained Soil Filter system. Both systems are designed in compliance with the General Standards and will provide treatment for new developed and impervious areas in conformance with the treatment requirements of the General Standards per MaineDEP Chapter 500, Section 4.C.(2)(a)(iii) (amended date August 12, 2015).
   c) Flooding Standard: The project will result in an increase in impervious area of approximately 2.9 acres. As such, the project is required to include stormwater management features to control the rate of stormwater runoff from the site. The Subsurface Sand Filter and Underdrained Soil Filter system are proposed to temporarily detain runoff on the site, and discharge runoff at a rate that is at or below the existing condition in the 2, 10 and 25 year, 24 hour storm events. As such the project is compliant with the Flooding Standard.

From: Jacob Staub <jpstaub1@gmail.com>
To: BAB@portlandmaine.gov
CC: rperkins3@maine.rr.com
Date: Wednesday, November 04, 2015 7:51 AM
Subject: 802 Ocean Ave - Friday 6NOV2015 1500 meeting

Good morning Ms. Barhydt,

I understand the meeting for 802 Ocean AVE scheduled for today has been moved to Friday at 1500. I plan on attending the meeting on Friday.

The email included below are my comments based on a closer review of the Stormwater Plan as is stands for the proposed development of 802 Ocean AVE.

Finally, it would be most helpful to know what feedback Woodard & Curran, Portland's technical representative, gave regarding the Stormwater Plan and the HydroCAD analysis that substantiates that plan. Based on what I'm seeing in the HydroCAD analysis, specialists in the field would have made it a point to note and document discrepancies. Any documentation you could provide on this matter would be appreciated.

Regards,
Jake Staub
301-769-8395

> Begin forwarded message:
>
> From: Jacob Staub <jpstaub1@gmail.com>
> Subject: Re: 802 Ocean Ave
> Date: October 30, 2015 at 10:08:52 PM EDT
> To: Robert McSorley <rmcsorley@sebagotechnics.com>
> Cc: rperkins3@maine.rr.com
>
> Hello Mr. McSorley,
>
> Thanks for reaching out and providing planning documents.
>
> Mr. Perkins and I were both surprised at the response of the Hawthorn Team to questions about the geographic location of the two watershed study points. As the general public, we were counting on an explanation of the technical aspects of the proposed stormwater design that allow it to function in accordance with flooding and stormwater quality requirements.
>
> To that end, the proposed design does not meet flooding requirements for the 25-year storm as Sebago Technics points out in Stormwater Management Plan Table 3 - Stormwater Runoff Summary Table and Paragraph 10. In paragraph 10 the assertion is made that runoff rates were controlled within the design to the greatest extent practical. However, no waiver was requested to bypass stormwater management requirements for the 25-year storm during this last Development Board meeting. The waiver process would determine whether or not more could be done. As far as practicality is concerned, there is little practical about developing a site with significant elevation change comprised almost entirely of ledge.
>
> The choice to use a subsurface soil filter to meet stormwater quality requirements is relatively high risk according to the Maine Best Management Practices (BMP) Stormwater Manual. "Subsurface soil filters including a detention/retention bed of chambers may only be approved as an alternative BMP design on a case-by-case basis as they generally require much more care in their design, construction, and maintenance. Subsurface sand filters are viewed as having a higher risk of failure and should not be considered unless all other alternatives have been considered and deemed impracticable because of the compaction necessary for bearing strength that is usually required of subsurface systems, because there is no vegetation to insure long term permeability, to provide evapo-transpiration or a long-term source of organic matter; and because there is no track record on this type of system (only on sand filters)."
>
> Aside from the relatively high risk that a sand filter poses, one troubling aspect of the proposed design is the behavior of Pond 210P(Sand Filter mc3500). It appears Pond 210P allows for a 10cfs runoff credit between Pond 62P and Pond 66P. During a 25-year storm the storage capacity of Pond 210P is maxed out at the beginning rather than the end of the heaviest period of rainfall in a Type III event. With storage maxed in Pond 210P Subcatchment 21 would add a 10cfs burden split between Ponds 60, 62, and 66P. Ultimately, this means development runoff rates during the 25-year storm could be 23% higher than normal. This is not in the best interest of those living downstream of the proposed development both in terms of flooding and stormwater quality.
>
> In all rain events considered, Pond 210P appears to fail Maine DEP Best Management Practices Stormwater Manual June 2010 Section 7.3.2 General Design and Construction Criteria for the impoundment depth limit of 18 inches. The assertion in Stormwater Management Plan, Paragraph 8 Water Quality Analysis, that, "Each treatment measure has been designed and sized in accordance with the current Maine DEP Stormwater Best Management Practices handbook," does not appear valid.
>
> In no scenario does the outflow from Pond 66P and Pond 105R add up to the inflow at Reach 106R. There is a significant amount of water unaccounted for. It vanishes on the run to Reach 106R. This is odd since both Pond 66P and Pond 105R are culverts. Sometimes they lose a little water. Sometimes they lose a lot of water. Sometimes they do not lose any water at all. HydroCAD's erratic output does not build confidence in the overall model solutions.
>
> It appears the development plan fails to control both flooding and stormwater quality. The Stormwater Management Plan states as much where

flooding is concerned although it is likely that flooding during a 25-year storm would be more severe than the plan acknowledges. Failure in stormwater quality seems substantiated through an examination of submitted planning documentation and a review of stormwater BMP design criteria. Additional explanation on the part of the Hawthorn Team would help clarify how the sand filter as designed satisfies the 18 inch impoundment depth limit.
>
> Finally, snow storage as well as snow melt come spring time deserves additional consideration where the present development plan is concerned. While relatively small preplanned areas of snow storage are depicted on Site Plan Sheet 5, it is likely that plowing will concentrate significant amounts of snow on the east side of the proposed development's drive after relatively small preplanned areas are overwhelmed. When combined with additional solar exposure due to woodland removal those living downhill of the banks of plowed snow will experience higher rates of runoff than they have in years past for comparable winter snowfall. Given a review of available planning documentation it appears no assessment has been made regarding snowmelt runoff and the impact on abutting properties.
>
> Based on the above, Mr. Perkins and I thought it appropriate to have a discussion about the plan as it stands at a City of Portland venue that includes the City's technical representative. The Development Review Services Manager was contacted and should coordinate that meeting. However, if you would like to meet and talk about any or all of the content above I would be happy to oblige. You can find me at 760 Ocean AVE most of the time. Just phone in advance to make sure I'll be there.
>
> Regards,
> Jake Staub
> 301-769-8395
>
>

From: Robert McSorley <rmcsorley@sebagotechnics.com>
To: rperkins3@maine.rr.com; jpstaub1@gmail.com
CC: dsenus@woodardcurran.com; BAB@portlandmaine.gov
Date: Friday, November 06, 2015 8:07 PM
Subject: Portland Retirement Residence
Attachments: 14432 66P 105R 106R Peaks 15-11-06.pdf; Chapter 500_Rainfall Events_Rev08-15.pdf; TYPE III Depth.pdf; TYPE III Intensity.pdf

Jake,

Per our meeting this afternoon, I have the following information for you: The peaks for the two culverts, 66P and 105R, and the study point, 106R; the rainfall storm amounts for the state of Maine and the intensity and total depth curves for Type III that are plotted vs. hours.

What I have given you is a PDF of screen shots from within the HydroCAD program for the three nodes and labeled the columns in the PDF; this was the only way to do it without printing out the reams of paper that we talked about. The last page of the PDF is from a spreadsheet that I created and added the discharges of 66P and 105R and then listed the corresponding peak of 106R.

Hope that helps. If you have any other questions, please call me.

Have a good weekend.

Rob McSorley

Robert A. McSorley, P.E.
Senior Project Manager
[face]<https://www.facebook.com/sebagotechnics>[link]<https://www.linkedin.com/company/1317041> Join us !

[cid:image002.jpg@01CF9509.D29BBDA0]

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ENGINEERING DIVISION
Portland Department of Public Services
55 Portland Street
Portland, ME 04101

M E M O

TO: Barbara Barhydt
Dave Margolis-Pineo, Deputy City Engineer
FROM: Mike Farmer, Project Engineer
DATE: Oct. 16, 2015
Revised Oct. 19, 2015
RE: 802 Ocean Avenue Project

I am submitting the following comments, on behalf of the Engineering Division, regarding the Site Plan for the *Portland Retirement* Residence project at 802 Ocean Ave. These comments are based on review of the Thompson's Point project. These comments are based on the Grading and Drainage Plan dated 9/18/2015 and the Sidewalk Plan dated 9/18/2015.

1. The level spreader near CB-7 (Grading and Drainage Plan) should be moved easterly so the discharge is not directly above the house at 804 Ocean Ave. and so the discharge would reach Ocean Ave. just uphill from the existing drain manhole in Ocean Ave. (i. e. the drain manhole 180 feet southwest of the intersection of the project driveway and Ocean Avenue. A new catch basin should be constructed about 5-6 feet from the edge of pavement (in Ocean Ave.) and connected to the existing storm drain manhole. The catch basin rim should be lower than the edge of pavement, so the catch basin will collect runoff from a shallow roadside swale just uphill from the new catchbasin location.
2. On the sidewalk plan, the Ocean Ave. r. o. w. line on the east side of Ocean Ave appears to be incorrectly shown. The sidewalk plans indicates a right of way width of up to 56 feet wide; whereas City records indicate the right of way is 49.5 feet wide. We request that the applicant check this boundary line and revise the plan as necessary.
3. There are two existing street monuments in the proposed sidewalk construction area. The sidewalk plan should show the monuments. The plan should state that the monuments shall be protected, and they should not be disturbed during construction, unless they need to be cut down or reset. If the monuments need to be altered to accommodate the sidewalk, contractor shall either cut them down or replace them as directed by the Engineering Division of the City. If the monuments have to be replaced, the replacement monuments shall be installed in conformance with the City's technical standards.
4. The grading and drainage plan shows a proposed connection of a 12-inch storm drain into an existing 18-ich City storm drain in Ocean Avenue. The proposed connection is an "Inserta-T." A Tee connection should not be used; a new, 4-foot diameter manhole should be constructed for such a connection.

5. One of the plans in the City's archives shows an underground telecommunication line along Ocean Avenue in the sidewalk construction area. The location of this utility should be verified and shown on the sidewalk plan.
6. Where the new sanitary sewer from the project joins the existing sanitary sewer manhole, the project sewer should be re-aligned so it enters the existing manhole at a 90 degree angle to the existing influent pipe to the manhole. The new pipe should enter the manhole 0.1 feet above the outflow pipe. The plans should indicate that the manhole channel will have to be rebuilt to accommodate the new pipe, and that bypass pumping will be required to allow proper construction of the new manhole channel in dry conditions.
7. The sidewalk plans should be revised to state that. where ledge removal is required to construct the sidewalk along Ocean Avenue, the ledge should be removed so there is at least two feet of level ground behind the sidewalk.

MEMORANDUM

To: FILE

From: Barbara Barhydt

Subject: Application ID: 2015-164

Date: 10/23/2015

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

I need some information in regards to emergency vehicle access to the West Wing or West side of the proposed 4 story structure.

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

I need information in regards to hydrants, locations, and how they will achieve adequate pressure for fire protection throughout the proposed structures. I.e. Pump houses, etc.
The applicant should work with the Portland Water District to achieve adequate water supply & pressure to the site.

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

Any Blasting will require the appropriate permits and approvals.

MEMORANDUM

To: FILE

From: Barbara Barhydt

Subject: Application ID: 2015-164

Date: 12/3/2015

Comments Submitted by: Keith Gautreau/Fire on 11/17/2015

Any Blasting will require the appropriate permits and approvals.

Comments Submitted by: Keith Gautreau/Fire on 12/1/2015

I have reviewed all the final plans and documentation. The plans reflect adequate emergency access to the rear of the site. The hydrant location is acceptable. Water flow calculations and pressures meet the National standards.

Comments Submitted by: Keith Gautreau/Fire on 12/1/2015

The maintanence agreement submitted with the packet shall be a condition of the site plan approval as well as a condition of the building permit approval process.

From: Jeff Tarling
To: Barbara Barhydt
Date: Wednesday, October 21, 2015 4:18 PM
Subject: 802 Ocean Avenue - Revised

Hi Barbara -

I have reviewed the landscape planting plan proposed for the 802 Ocean Avenue project and offer the following comments and recommendations:

Overall the plant density for the landscape appears to meet city standards. "Tree Save" areas inside the limit of work appears to be non existent perhaps due to grading. Access to existing trails should be shown on plan and perhaps enhanced in places for resident use.

Native tree & plant recommendation / condition - Recommend using a higher percentage of native plants, trees & shrubs.

The 802 Ocean Avenue site is located in a "Oak - Pine" woodland with a great percentage of existing native trees and plants, the native
plant types are more adaptable to the site from a sustainability perspective, and fit into the existing area and offer environmental and habitat benefits. Non native ornamental plants should be focused around the building envelope with a greater percentage of native plant types around the edges and to reduce invasive plant contamination into the existing native woodlands. This is an important
feature of the site and should be a condition of approval. There are many useful native plants available that would fit into this site and
would meet the landscape objectives of creating seasonal interest. Attached useful links for consideration. Note: Areas with thin soils, depths to
bedrock may consider using smaller caliper sizes to better acclimate to site. Planting around the proposed pond should be all native to
blend into the surrounding area - Larch, Red Maple, Tupelo, Amelanchier clump form would be recommended. Sweet fern would be highly
recommended in the rocky, shallow soil exposed ledge areas.

Cut / Ledge areas - exposed ledge faces should consider risk reduction measures such as fencing, landscaping, or other.

Landscape tree & plant recommendations:

a) Trees that should not be used, or are not on the City Recommended tree list include:

Ash species due to the threat of Emerald Ash borer and likely future impact or loss of this species in Maine. Listed as 'Fraxinus Penn. Patmore Green Ash"

b) Non native tree species alternative recommendations:
Ginkgo - 16, used to line the driveway, while a good urban tree, site would be perhaps better suited for 'Bowhall" or 'Karpick' Maple, 'Regal Prince' Oak, which are upright shaped tree forms more in keeping with a native plant theme.

c) Alternative native tree recommendations:

Acre rubrum - Red Maple suitable for wet areas, Amelanchier - clump form, Betula popuulifolia (gray birch), Larix laricina, (Eastern Larch) suitable for wet areas, Nyssa suitable for wet areas, Ostrya, Oxydendrum - ornamental, native pines - Pinus resinosa (Red Pine), P. rigida (Pitch Pine), P. strobus (White Pine), P. bansiana (Jack Pine), Quercus rubra (Red Oak), Q. Prinus (chestnut oak) tolerates dry sites and windy conditions.

Tree Save / Construction Measures - Condition of Approval:

Plan shall include tree protection measures and notes on how to avoid construction damages
such as no storage of construction equipment or supplies in the root zone of 'tree save'
areas. Limit of work / 'Tree Save' shall be in place at the time of Pre-construction meeting
as shown on plan. Plan currently shows 5' tree protection fence & silt fencing, both are needed.
Recommendations in the attached guidelines should be included in construction management
plan, International Society of Arboriculture recommendations:

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Additional information & reference:
Information that may be useful to describe the existing woodland types and plants that are typical to sites like 802 Ocean.

Native landscape resources :

Gardening to Conserve Maine's Native Landscape: Plants to Use and Plants to Avoid:
http://umaine.edu/publications/2500e/

802 Ocean Avenue, Woodland descriptions from State of Maine Natural Areas program -

(These descriptions outline the vegetation types that are found in areas similar to the 802 Ocean Avenue site; for reference use)

Oak - Pine Woodland

Community Description: These woodlands support a partial canopy (20-70%) dominated by red oak, or red oak with white pine or red spruce (rarely with red pine). The trees are widely spaced and often stunted, with an open under story. Gray birch is a common small tree. The herb layer is well developed (>25% cover), with one-third to nearly all of the layer consisting of dwarf shrubs. Lowbush blueberry is the most abundant dwarf shrub; sheep laurel is also common. Herbs form 1-20% cover among the dwarf shrubs.

Oak - Pine Forest

Community Description: This type is a closed canopy forest (>75% closure) in which red oak or a mixture of oak and white pine (rarely red spruce or hemlock) dominate. Red maple (up to 30% cover) and paper birch (up to 15% cover) can be common in younger stands. Striped maple is a common subcanopy associate; several other shrubs may be frequent. The herb layer is usually somewhat sparse (<30% cover), and features bracken fern, lowbush blueberry, and various herbaceous species; dwarf shrubs contribute 0-15% cover. The herb layer often includes forest species such as wild-oats and Indian cucumber-root that are seldom found in more open Oak - Pine Woodlands.

Pitch Pine - Scrub Oak Barren

Community Description: This woodland type ranges from very open to nearly closed canopy (25-75% closure) in which pitch pine is dominant (up to 50% cover). Red maple is frequent but rarely abundant in the canopy. In openings among the trees, a dense shrub/sapling layer of scrub oak is typical. Gray birch may be a prominent feature of the shrub layer, and shrubs are locally dense. A low layer of heath shrubs dominated by lowbush or velvet-leaf blueberry is usually present. Bracken fern and woodland sedge are characteristic herbs

Woodland description web links:
http://www.maine.gov/dacf/mnap/features/communities/oakpinewoodland.htm

http://www.maine.gov/dacf/mnap/features/communities/oakpineforest.htm

http://www.maine.gov/dacf/mnap/features/communities/pitchpineoakbarren.htm

Plant & seed resources:
Pierson Nurseries - http://www.piersonnurseries.com/availabilityandpricelists

New England Wetland Plants, Inc. - http://www.newp.com

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Tree type sheets:
'Regal Prince' Oak - http://www.jfschmidt.com/pdfs/regalprinceoak.pdf

Eastern Larch - http://plants.usda.gov/plantguide/pdf/pg_lala.pdf

http://www.treesaregood.com/treecare/resources/AvoidingTreeDamage.pdf

http://www.treesaregood.com/treecare/resources/ConstructionDamage.pdf

From: Jeff Tarling
To: BAB@portlandmaine.gov
Date: Wednesday, December 02, 2015 10:00 AM
Subject: Re: Portland Retirement - extra

Hi Barbara -

Two extra items, due to the steep cut slopes the project should address the potential risk of fall from the wooded trail or north side. This could consist of wire 'Ag' fencing & / or caution signage, along disguising any existing trails that might lead to the escarpment. Second, proposed landscape treatment near the ledge cut area may present grow space challenges due to shallow soil depths. The landscape plan is good as proposed, if an alternative plan is needed for these areas after site work is conducted an amended landscape plan should be generated early on vs at the end of construction phase.

>>> Barbara Barhydt 12/02/15 08:02 AM >>>
Thank you Jeff. I will put it in the report as such.

>>> Jeff Tarling Wednesday, December 02, 2015 8:00 AM >>>
Hi Barbara -

I talked to the landscape architect last week and approve the response revisions.

Thanks

Jeff

>>> Barbara Barhydt 12/2/2015 7:55 AM >>>
Hi Jeff:

Portland Retirement submitted a revised landscape plan and response to your comments. This is going for a public hearing on Tuesday and I need to know if you are ok with this. Could you make time to discuss with me after the Wed review meeting today?

Thanks.

Barbara

From: David Margolis-Pineo
To: Rob McSorley; Robin Goins
CC: Barbara Barhydt; Benjamin Pearson; Helen Donaldson; Jean Fraser; Jeff Levine; John Emerson; Nancy Gallinaro; Shukria Wiar
Date: Wednesday, October 21, 2015 4:54 PM
Subject: Wastewater Capacity Application Approval - 802 Ocean Ave, Portland, Maine
Attachments: David Margolis-Pineo.vcf

October 21, 2015

Hawthorn Development Group
Attn: Robin Goins (robin.goins@hawret.com)
9310 NE Vancouver Mall Drive – Suite 200
Vancouver, WA 98662-8210
Portland, ME 04101

RE: Capacity to Handle Wastewater Flows from 802 Ocean Ave
Proposed Congregate Care Facility

Dear Hawthorn Development Group:

The Department of Public Services, which includes the Water Resource Division, has reviewed and determined that the downstream sewers from 802 Ocean Ave has the capacity to convey the estimated 10,230 gallons per day of wastewater which will be generated from this Congregate Care Facility. It is understood that no sources of stormwater runoff, roof drainage, or any other non-contaminated water shall be introduced to the wastewater collection system from this development.

If the City can be of further assistance, please call me at 874-8850 or 400-6695.
Sincerely,

CITY OF PORTLAND

David

Margolis-Pineo

David Margolis-Pineo
Deputy City Engineer

Anticipated Wastewater Flows from the proposed Congregate Care Facility:

135 Residential Care Units @ 60 gpd/Resident = 8,100 gpd
15 Duplex Residential Care Units @ 120 gpd/Resident = 1,800 gpd
Manager's Unit – 210 gpd
Co-Manager's Unit – 120 gpd

Total = 10,230 gpd

CC: Jeffrey Levine, 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
Nell Donaldson, Department of Planning and Urban Development, City of Portland
Shukria Wiar, Planner, Department of Planning and Urban Development, City of Portland
Jean Fraser, Planner, Department of Planning and Urban Development, City of Portland
Nancy Gallinaro, Water Resources Manager
Benjamin N. Pearson, E.I., Industrial Pretreatment Coordinator, City of Portland
John Emerson, Wastewater Coordinator, City of Portland
Robert A. McSorley – Sebago Technics, Inc

David Margolis-Pineo

Deputy City Engineer
Department of Public Services
55 Portland St.
Portland, ME 04101
Office 207-874-8850
Fax 207-874-8852
Cell 207-400-6695
dmp@portlandmaine.gov

From: Robert McSorley <rmcsorley@sebagotechnics.com>
To: Barbara Barhydt <BAB@portlandmaine.gov>, Mark Lowen <markl@lenityarchitecture.com>
Date: Friday, October 23, 2015 8:37 AM
Subject: RE: clarification on state natural resources
Attachments: 14432 MDEP DETERMINATION.pdf

Good morning Barbara,
To answer your questions and some others that were raised during the peer review, we offer the following. First, the drainage course through the project was reviewed by MDEP several years ago and we have a written determination that it is not a stream by MDEP definitions (copy attached). The project has been planned and designed to preclude any impacts to jurisdictional wetlands. Therefore, there is no federal (ACOE) jurisdiction relative to wetland impacts since there are none. Relative to MEIFW's letter, the wetlands were reviewed and mapped by our wetland scientist and there were no significant vernal pools identified. Therefore, there is no MDEP jurisdiction review relative to wetlands or vernal pools required.
Relative to the bat habitat, this is a new issue that has been raised by the listing of the northern long-eared bat by the Federal Government. In order to avoid a potential "take" of the bats, the current guidance is to not impact potential habitat during the roosting, breeding and migratory periods for the bats. The period for the bats to be in hibernation in their hibernacula has been established as October 15 to April 20. If we were jurisdictional to ACOE, based upon clearing during this time frame, the ACOE "...would make a 'may effect but not likely to adversely effect' determination..."relative to the bats. We have told our client that the project would therefore require tree clearing to occur during the October 15 to April 20 time frame.
Hope that helps, Rob
Robert A. McSorley, P.E.
Senior Project Manager
[face]<https://www.facebook.com/sebagotechnics>[link]<https://www.linkedin.com/company/1317041> Join us !

[cid:image002.jpg@01CF9509.D29BBDA0]

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An Employee Owned Company

75 John Roberts Road - Suite 1A
South Portland, ME 04106

Office: 207.200.2100
Direct: 207.200.2074
Mobile: 207.939.1809
Fax: 207.856.2206

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From: Barbara Barhydt [mailto:BAB@portlandmaine.gov]
Sent: Friday, October 23, 2015 7:44 AM
To: Mark Lowen <markl@lenityarchitecture.com>; Robert McSorley <rmcsorley@sebagotechnics.com>
Subject: clarification on state natural resources

Good morning:

I see that no significant habitats were identified for the site, but the Department of Agriculture recommended with US Wildlife regarding bats and to identify if vernal pools exist. Are these requirements or suggestions and what is the status of those requests?

Thank you.

Barbara

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF LAND AND WATER QUALITY

FIELD DETERMINATION ID 3388

Field Determination Form

CONTACT

DIANE DOYLE
DOYLE ENTERPRISES LLC.
16 TIFFANY LANE
SACO ME 04072
TELEPHONE (207) 229 -3530

PROPERTY OWNER

DOYLE, DIANE
16 TIFFANY LANE
SACO ME 04072

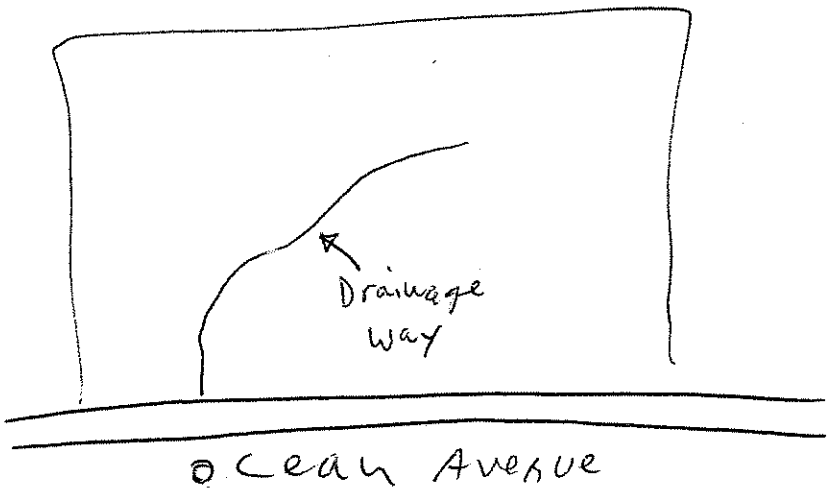
STAFF GALLANT II, FRED
RESOURCE UP

DIRECTIONS

Ocean avenue extension on left before Dragon Concrete.

TOWN PORTLAND
MAP LOT

MEMO The depression in the woods on this property is not a stream as defined by the Natural Resources Protection Act. Erosion control devices must be installed and maintained on the project site during any soil disturbance activity. A Maine Construction General Permit "NOI" and "NOT" must be filed with the Department if more than 1 acre of area is going to be disturbed on the project site at any given time during construction.



Name: Fred Gallant II

RECEIVED 10/26/2004 SITE VISIT 10/26/2004 COMPLETED 11/16/2004

MEMORANDUM

To: FILE

From: Barbara Barhydt

Subject: Application ID: 2015-164

Date: 12/4/2015

Comments Submitted by: David Margolis-Pineo/Engineering DPS on 12/4/2015

The Department of Public Works has reviewed the applicant's responses and are satisfied that this Department's commnents have been addressed.

PC1

lenity
architecture

Barbara Barhydt
Development Review Services Manager
Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

Thursday, October 22, 2015

Dear Barbara

I, Mark D. Lowen, Lenity Architecture Land Use Manger OBO Hawthorn Development hereby certify that a neighborhood meeting was held on October 8, 2015 at the Presumpscot Elementary School Gymnasium, 69 Presumpscot Street, Portland ME, 04103 at 7:00 PM.

I also certify that on (date at least ten (10) days prior to the neighborhood meeting), 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 (and) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed, _____ 10/22/15 (date)
Mark D. Lowen
Land Use Manager
Lenity Architecture

Attached to this certification are:
1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes
4. PDF of the PowerPoint

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NEIGHBORHOOD MEETING NOTICE

To: Neighbors in the vicinity of 802 Ocean Ave in Portland Maine

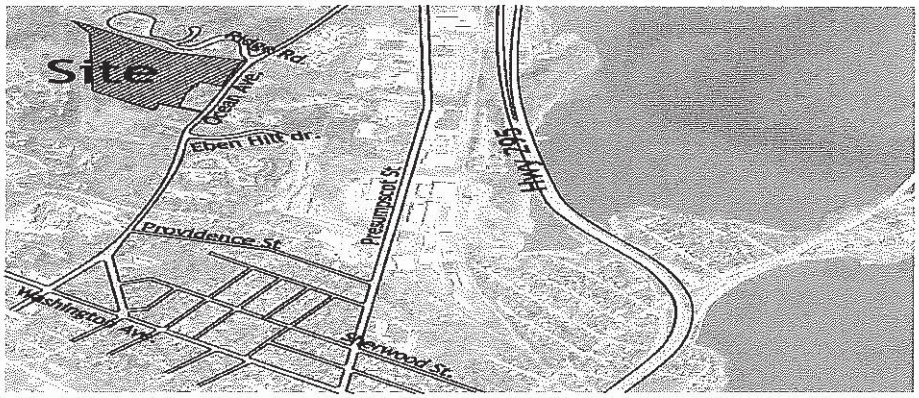
From: Lenity Architecture / Hawthorn Development

Regarding: Site Plan Application to allow the development of a 4 story, 150 suite, Congregate Care Facility (Independent Living Senior Housing)

The City Code requires the 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 d to the Planning Board

The neighborhood meeting will be held at 7:00 PM, Wednesday October 8th, 2015 at the Presumpscot Elementary School Gymnasium, located at 69 Presumpscot Street, Portland ME, 04103

Your participation is encouraged. Please contact us with any questions at (503) 399-1090.



Vicinity Map

We look forward to meeting with you.
Mark Lowen - Land Use Manager
markl@lenityarchitecture.com

3150 KETTLE COURT SE SALEM, OREGON 97301 P 503 399 1090 F 503 399 0565 W lenityarchitecture.com

Portland Maine Retirement Residence - Neighborhood Meeting

October 8, 2015

Attendance - Sign in Sheet

1) TOM EMERY

2) Wayne Goodman

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

16) _____

17) _____

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Portland Retirement Residence

Neighborhood Meeting 10/8/15 – 7:00 PM

A neighborhood meeting was held at the Presumpscot School on Presumpscot Street in Portland relative to the proposed site development submission by Hawthorn Development. Two members of the local neighborhood attended (see attendance sheet) Mark Lowen of Lenity Architecture LLC, did an overview of the project and the resent ZMA approvals by the City Council meeting that was held earlier this year. Robert McSorley PE. From Sebago Technics addressed site design and grading, strormwater design and impact, road, driveway and sidewalk improvements and general issues relating to site preparation and possible blasting.

A list of the attendees is attached. The items that Mr. Lowen and Mr. McSorley reviewed are as follows:

- A brief description of the use and facility
- A brief review of the land use (ZMA) process and the current approvals
- Changes in the site plan post ZMA approval
- Construction Timelines
- As part of the overview, a Power Point presentation was shown that outline Building, Site and Stormwater design features these include:
    1. Building changes, finish floor elevations, adjustments in footprint location to reduce the amount of blasting and materials excavation
    2. Site changes, avoiding wetlands impact, accommodating the Portland Trails access (easement)
    3. Relocation of and reduction of the number of one story garage building, location and purpose for the water booster pump system for the site.
    4. Location and access point(s) for the Portland Trials easement to the rear of the site.
    5. Stormwater Design, avoiding main drainage course for SW discxharge, use of a underground subsurface said filter, the use of a spreader swale so we can eliminate the "wet pond" reducing SW flow to the residents along Ocean Avenue

After the presentation, Mr. Lowen and Mr. McSorley opened up the meeting for questions from the attendees. The following is a generalization of the questions asked during the presentation and the follow question period:

Can you give a brief description of the use and services? A Non-medical senior residence. Typical resident is an active senior in the 80's. Services and amenities include; 3 meals/day 7 days/week - served restaurant style, Housekeeping and linen service, Social and physical activities, 24/7 on site management, Van service, Chapel, beauty salon, exercise room, game room, libraries, coffee lounge, movie theater, private rooms for family gatherings and many smaller gathering areas throughout the building

- What is the construction time line? 12-14 months

- What is the location of the Portland Trials access easement? We reviewed the color coded map provide by Sebago Techincs

- What are the Stromwater outflows points and impacts? Mr. McSorley discussed the overall SW design showing the pertinent design drawings and give details on the onsite dry pond depressions and swale areas, underground sand filter system and discharge points

- What are you going to do relative to blasting? – To date, we have done preliminary soil work and we have determined that some blasting will be necessary. We have talked with the geotechnical engineer in general and will be dealing with their geologist. As of today, we are considering Maine Drilling and Blasting as they are known to be one of the best in New England.

- Will there be a pre-blasting survey for the surrounding area? We will meet all the blasting requirements including the offer of pre-blast surveys, notifications and insurance as required by state law and the ordinance requirements for the City of Portland.

- There was some conversation at the Planning Board meeting relative to units with kitchens/no kitchens. Hope that will not be a stumbling block to the project.

- What is the timeline for the site approval process? We anticipate a Planning Board workshop on October 27th with a possible final hearing and vote on December 8th; depending on how complex the site revisions are as we go through the staff review and workshop process.

The meeting concluded at approximately 7:45 PM with all parties agreeing that this project likely will be a positive addition to the local neighborhood and the greater Portland community.

Respectfully Submitted
Mark D. Lowen
Lenity Architecture



PORTLAND RETIREMENT RESIDENCE

Lenity Architecture, LLC

Approved Development

- Congregate Care Facility

  150 Suite (4 story) Retirement Residence

  3 - Garage buildings & accessory buildings (one story)

  102 Parking spaces

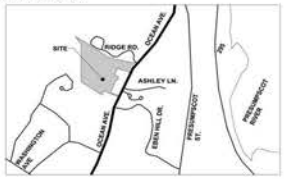
  84%+ Landscape and Open Space

Revisde Color Site Plan - Replace



Portland Vicinity Map

SCALE: N.T.S.



PROJECT STATISTICS:

PROJECT AREA:

TOTAL AREA 18.33 ACRES NET	798,363 SQ. FT.	
TOTAL BUILDING COVERAGE:	43,035 SQ FT	5.5%

AREA CALCULATIONS:

RETIREMENT BUILDING:	39,885 SQ. FT.	5.0%
GARAGES:	3,022 SQ. FT.	0.4%
ACCESSORY BUILDINGS:	128 SQ. FT.	0.1%
DRIVES:	61,106 SQ. FT.	7.6%
WALKS AND PATIOS:	20,480 SQ. FT.	2.5%
LANDSCAPED OPENSPACE:	673,742 SQ. FT.	84.4%

PERVIOUS / IMPERVIOUS AREA

IMPERVIOUS AREA: 15.6% PERVIOUS AREA: 84.4%

PARKING:

RETIREMENT PROJECT:
87 OPEN SPACES
12 COVERED SPACES
5 ACCESSIBLE SPACES
104 TOTAL SPACES

REFERENCE SITE PLAN

DATE: 06 Feb 2015
SCALE: 1" = 60'-0"

0 30 60 90 120

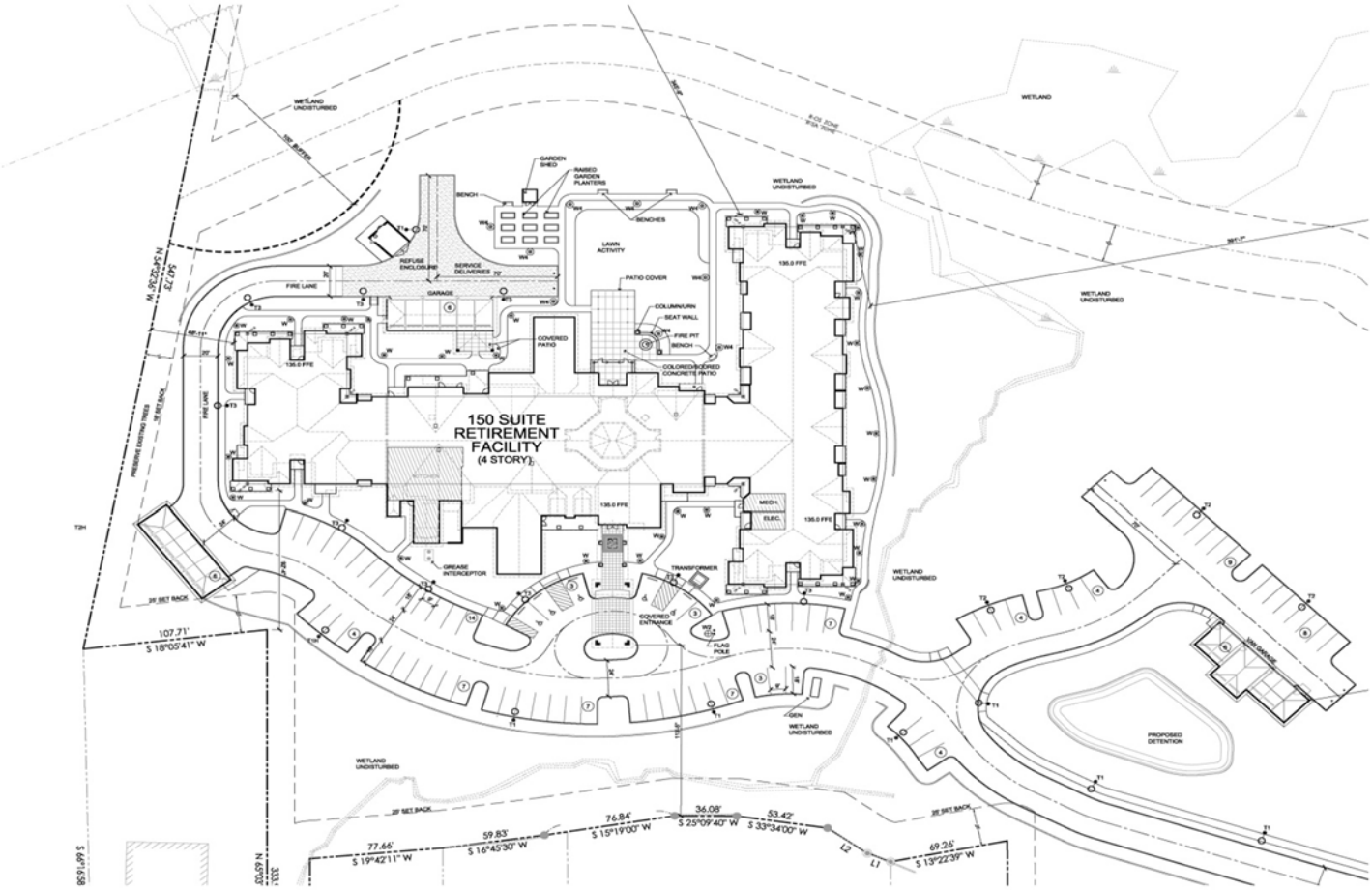
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3150 Kettle Court SE, Salem, Oregon 97301
p 503 399 1090 f 503 399 0565 w lenityarchitecture.com

Portland Retirement Residence
Portland, Maine

HAWTHORN RETIREMENT GROUP
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

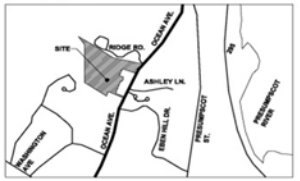
Lenity Architecture, Inc.

Revised Site Plan



Portland Vicinity Map

SCALE: N.T.S.



PROJECT STATISTICS:

PROJECT AREA:
TOTAL AREA 18.33 ACRES NET 798,363 SQ. FT.
TOTAL BUILDING COVERAGE:

AREA CALCULATIONS:

RETIREMENT BUILDING:	39,869 SQ. FT.	5.0%
GARAGES:		
ACCESSORY BUILDINGS:	128 SQ. FT.	0.1%

PERVIOUS / IMPERVIOUS AREA
IMPERVIOUS AREA: 15.9% PERVIOUS AREA: 84.1%

PARKING:
RETIREMENT PROJECT:
82 OPEN SPACES
18 COVERED SPACES
5 ACCESSIBLE SPACES
102 TOTAL SPACES

SITE PLAN

DATE: 28 Aug. 2015
SCALE: 1" = 30'-0"

0 15 30 60 90

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Portland Retirement Residence

Portland, Maine

HAWTHORN RETIREMENT GROUP
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

Lenity Architecture, Inc.

Site Design Features

Building Changes

- The building has been located in the flatter portion of the site
- Finished floor elevation has been set so that the highest points of the structure would be roughly about the height of the natural vegetation.
- Building site grade will be cut to this elevation and keeps the height of the structure below the tree canopies to the west.
- Building location was chosen to maximize the separation from the existing surrounding developments and to minimize the amount of material that would need to excavated and potentially blasted on-site.

Site Design Features

Site Changes

- Careful consideration was given to the on-site natural resources, minimizing the amount of land necessary for the development to only 4.93 acres of developed area utilized (less than 50% of the R-5A portion of the property)

- Site design also avoids impacts to any of the on-site wetlands leaving a large portion of the undeveloped R-5A zone area contiguous with the preserved area within the R-OS zone.

- The developer has coordinated with Portland Trails to execute an easement allowing public access through the developed port of the property to existing trails with the R-OS area.

- The location of the 3, one story garage structures have been reconfigured with one in the northerly parking lot, the second at the southerly end of the site and the third at the rear of the building on the southwesterly end of the site.

- The project will require a booster pump system to ensure that fire protection flows are met.

Site Design Features

Stormwater

- The stromwater design maintains the natural drainage course through the development site, draining the western portion of the property and some areas from the adjacent Ocean Ridge Condominiums.

- This design has avoided using the main section of the drainage course for discharge of the site.

- We have chosen to use an underground sub surface sand filter for the southern portion of the development. This system will discharge closer to the section of the drainage course that flows to the east to Ocean Avenue.

- No wet pond needed, in its place we have proposed an under drained soil filter in lieu of discharges to the natural drainage course through the middle of the site. So, discharge will be managed via a spreader swale down slope of the access roadway. This will reduce the amount of flow that was previously designed to flow in the drainage course upslope and in back of the residences that front of Ocean Avenue.

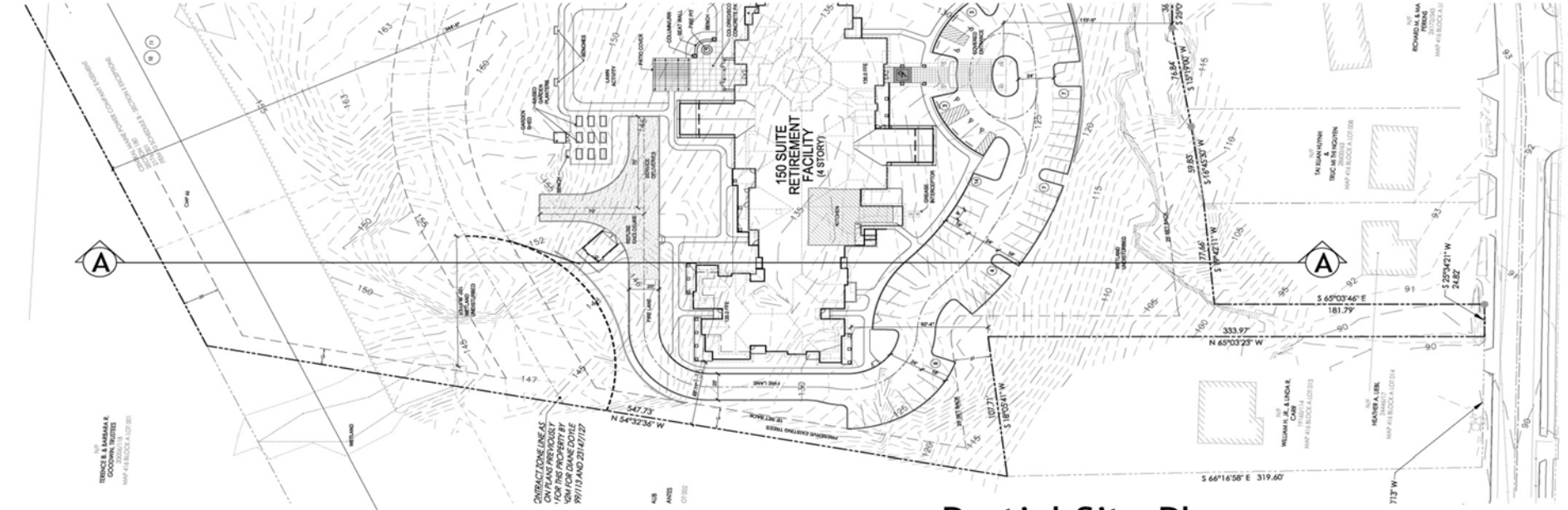
Site Design Features

Off Site Improvements

- This project will complete the missing link of sidewalk along Ocean Avenue from just north of Ashley Lane to sidewalk opposite the Ocean Ridge Condominiums,

- GAS SERVICE - We have coordinated with Unitil relative to the extension of the gas main that exists to the south on Ocean Avenue to determine the feasibility to extend the main to serve this project. We have also coordinated with some of the neighbors relative to this extension as many of the existing developments would also like the ability to be served by Unitil.

Topographic Site Section



Partial Site Plan



Site Section A-A

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Portland Retirement Residence

Portland, ME

HAWTHORN RETIREMENT GROUP
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

Entrance View from Ocean Ave



Lenity Architecture, LLC

View to Entry



Lenity Architecture, LLC

Front View - Open



Lenity Architecture, LLC

Front View from Ocean Ave



Lenity Architecture, LLC

South Side View - Open



Lenity Architecture, LLC

South Side View



North Side View - Open



Lenity Architecture, LLC

North Side View



Exterior Colors and Materials



EXTERIOR MATERIALS:

Roof- GAF Timberline: Weathered Wood

Trim- James Hardie: Arctic White

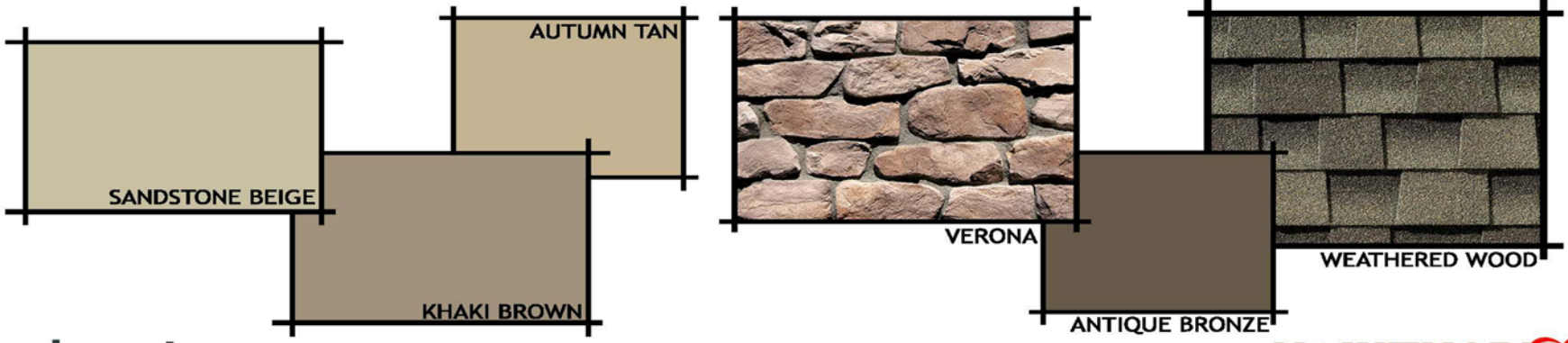
Siding 1- James Hardie: Khaki Brown

Siding 2- James Hardie: Sandstone Beige

Shingles- James Hardie: Autumn Tan

Awnings- MS Metal: Antique Bronze

Stone- Coronado French Country Villa: Verona

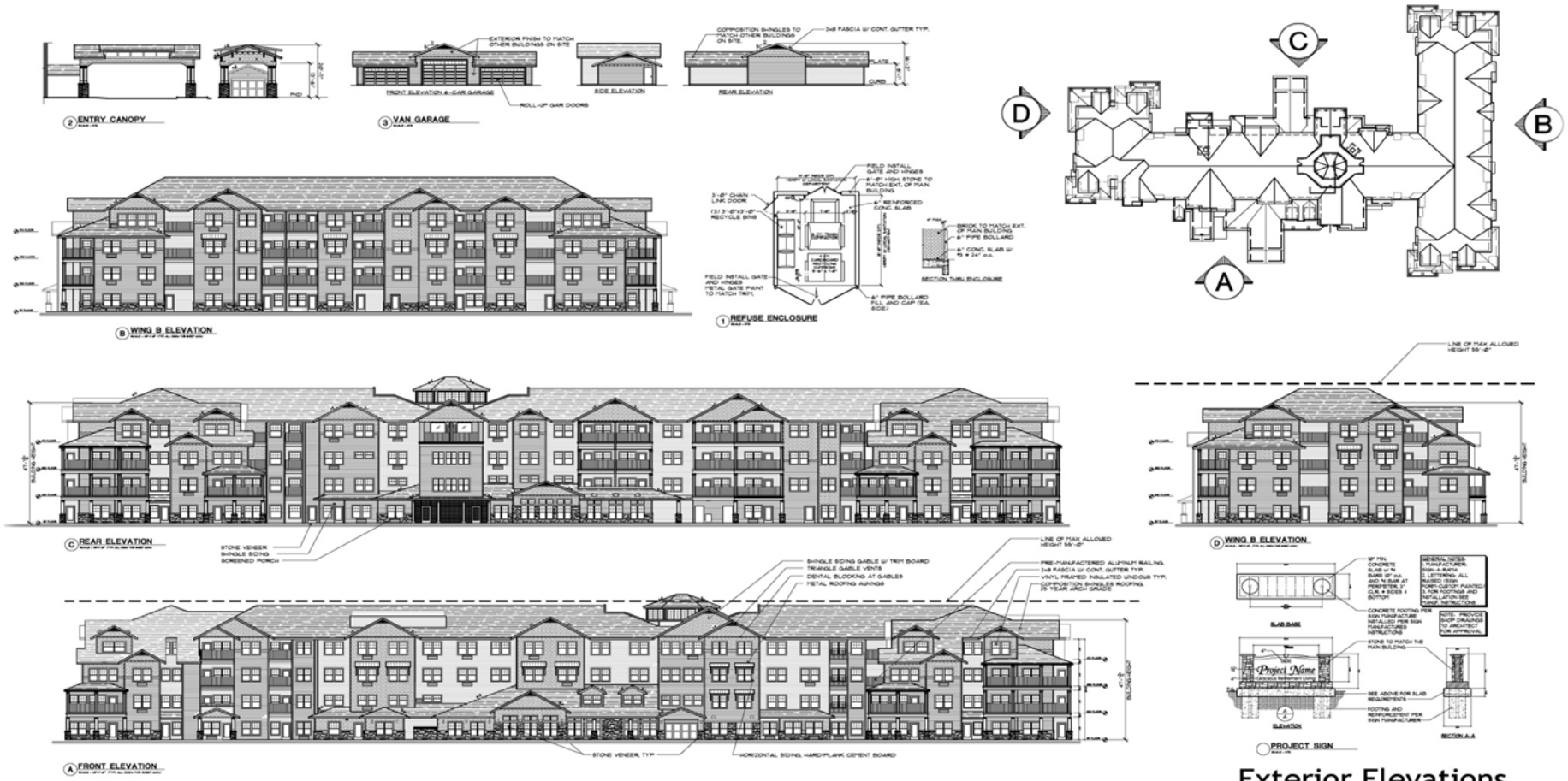


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Portland, ME

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Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

Exterior Elevations



Exterior Elevations

DATE: 06-01-15

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Portland Retirement Residence

Portland, Maine

HAWTHORN RETIREMENT GROUP

9310 NE Vancouver Mall Dr., Suite 200

Vancouver, WA 98662-8210

(360) 213-1550 Fax (360) 213-1540

Exterior Details



Exterior Details



Exterior Details



Exterior Details



Site Plan Process for 802 Ocean Ave

- Site Plan (Building Design) Meetings and Hearings:
  - Staff Review
  - Neighborhood Meeting 10/8/15
  - Planning Board Workshop – 10/27/15
  - Planning Board Public Hearing and Vote – Date TBD



PORTLAND RETIREMENT RESIDENCE

Lenity Architecture, LLC

Att. A

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

SITE PLAN APPLICATION

To
City of Portland

For

Portland Retirement Residence
802 Ocean Avenue
Portland, ME 04087

Prepared for

Hawthorne Retirement Group
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-2810

September 2015

Site Plan Application

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- Maine Inland Fisheries and Wildlife (MIFW)
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Section 7. Summary of Existing/Proposed Easements

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Section 10. Construction Management Plan

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Section 14. Statement of Project's Consistency with City Master Plans

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September 17, 2015
14432

Barbara Barhydt, Development Review Manager
City of Portland
Planning and Urban Development Department
389 Congress Street
Portland, ME 04101

Re: **Site Plan Submittal – Portland Retirement Residence**
802 Ocean Avenue, Portland, ME, Map 411, Lot 7A and Map 416, Lots A6, A7 & A21

Dear Barbara:

On behalf of our clients, Hawthorn Development Group, LLC and Lenity Architecture, we are pleased to submit the enclosed Level III Site Plan Application for the above referenced project. Hawthorn Development Group, LLC proposes to construct a 150 unit congregate care facility on the property with associated vehicle parking and loading, landscaping, and stormwater management treatment systems.

Independent Senior Housing / Congregate Care Facility Concept
The Congregate Care concept is designed for residents with an average age of 82 who are still ambulatory. The facility does not offer medical or nursing care. This development will be privately funded and operated, and will not receive government subsidies.

Each private suite offers the advantages of independent living while the services included provide support, security, and friendship. The private suites include studio, one, and two bedroom versions. Suites do not contain kitchens, therefore they are not dwelling units, and all resident meals are served in a central dining room.

Services for residents include three prepared meals daily, housekeeping, laundering service, private van transportation, and various social and physical activities. The Management Team lives on the premises and is available to residents 24 hours a day. The residents monthly rent payment covers the cost of their private suite, all meals, services and utilities, no “buy in fee” is required.

Our typical resident is a single woman in her late 70’s or 80’s who lives within 10 miles of the site. Approximately 10% of suites will be rented by couples resulting in a total building population of approximately 165. Fewer than 20% of the residents will be driving their own cars. Because most of our residents prefer not to drive, we provide private van transportation for their use. Van service is included in the monthly rent, available 24/7 and offers residents independence and mobility while providing their families peace of mind.

This type of use does not create the problems typically associated with higher density developments, such as traffic, noise, or increased demand on public services.

Existing Site

The development site is part of an 18.33 tract of land which is located on the west side of Ocean Avenue approximately 0.5 mile north of Washington Avenue. The property has substantial frontage on Ocean Avenue where it also borders individual residential lots that are on Ocean Avenue. The property is bounded on the north by the Ocean Ridge Condominiums, on the west by Alden's Walk Condominiums and forested land and on the south by a single family residential property. The western portion of the property (8.17 acres) is transversed by a 135 foot wide Central Maine Power transmission line easement and is zoned as Residential Open Space (R-OS). The eastern portion of the property (10.16 acres) which is zoned as R-5A Residential Zoning District is the land on which the development is proposed.

The property grades varies from a high point of approximately elevation 170 (location of USGS marker "West Graves") to elevation 145 to 160 along the western boundary and to elevation 100 to 110 along the Ocean Avenue frontage. Slopes vary from 5 to 10% in central portion of the property up to 15 to 25% slopes along Ocean Avenue. The western portion of the property contains wetlands of varying sizes, some of which overflow to a shallow drainage course/wetland that bisects and flows through the eastern portion of the property and southerly along the boundary which the adjacent lots that front on Ocean Avenue. This drainage course eventually turns to the east and discharges from the property via culverts under Ocean Avenue (see stormwater Management Plan).

Extensive geotechnical explorations (see soils report contained within the submission) have been completed for the property; the site is forested with a surficial layer of forest duff and topsoil. The surface is generally overlaid by a thin layer of silty sand and/or silty glacial till overlying shallow bedrock. This bedrock was encountered at the explorations at depths varying from about ½ to 5 feet.

Site Design

Based upon the neighborhood meetings that we have held to date, one aspect of the site layout and design was based upon locating the main structure to minimize the potential for visual impacts from adjacent properties. This was achieved by locating the building in the flatter portion of the site and setting the finished floor elevation such that the highest points of the structure would be roughly about the height of the natural vegetation. The front portion of the natural grade in this area varies around the proposed finished floor elevation of 135. The existing grade in the back portion of the building site will be cut to this elevation and keeps the height of the structure below the tree canopies to the west. This location was also chosen to maximize the separate from the existing surrounding developments and to minimize the amount of material that would need to excavated and potentially blasted on-site.

Careful consideration was also given to the natural resources on-site with placement of the building. By the layout of the site, we have been able to minimize the amount of land necessary for the development with only 4.93 acres of developed area utilized (less than 50% of the R-5A portion of the property). The site design also avoids impacts to any of the wetlands on-site and leaves a large portion of the undeveloped R-5A zone area contiguous with the preserved area within the R-OS zone. The applicant has coordinated with Portland Trails and executed an easement to allow public access through the developed port of the property to existing trails with the R-OS area.

We have also tried to address some of the concerns of our neighbors in the stormwater design for the project. We have maintained the natural drainage course through the development site which drains the western portion of the property and some areas from the adjacent Ocean Ridge Condominiums. Unlike the prior proposed developments, we have avoided using the main section of this drainage course for discharge of the site; we have chosen to use an underground sub surface sand filter for the southern

portion of the development. This system will discharge closer to the section of the drainage course that flows to the east to Ocean Avenue. Because of concerns relative to the wet pond that was previously proposed on the northerly portion of the site, we have proposed an under drained soil filter. In lieu of discharges to the natural drainage course through the middle of the site, this filter will discharge via a spreader swale down slope of the access roadway to maintain a current drainage path in the site. This discharge will reduce the amount of flow that was previously was designed to flow in the drainage course upslope and in back of the residences that front of Ocean Avenue.

In addition to the changes reflected above, the project will complete the missing link of sidewalk along Ocean Avenue from just north of Ashley Lane to sidewalk opposite the Ocean Ridge Condominiums, north of the property. The design maintains the section that was used to the south on Ocean Avenue when CSO/roadway improvements were completed several years ago. We have coordinated with the Public Services Division to address minimizing the impact to adjacent properties by moving the walk adjacent to the curb line in one area thus avoiding/minimizing the removal of a large ledge outcropping.

The site will be served by public water supplied by Portland Water District and the City's gravity sewer system located within Ocean Avenue. Based upon the height of the property and the operating pressures within the 12" water main in Ocean Avenue, the project will require a booster pump system to ensure that fire protection flows are met. This system will be placed within an accessory building at the project's entrance along the water meter for the project. We have coordinated with Unitil relative to the extension of the gas main that exists to the south on Ocean Avenue to determine the feasibility to extend the main to serve this project. We have also coordinated with some of the neighbors relative to this extension as many of the existing developments would also like the ability to be served by Unitil.

Our clients are looking forward to the continued working relationship that we have had with the City of Portland and City staff as this project moves through the Planning Board review process.

If you have any questions, relative to this submission, do not hesitate to contact me. Thank you once again for your time relative to our application.

Sincerely,

SEBAGO TECHNICS, INC.



Robert A. McSorley, P.E.
Senior Project Manager

RAM:ram/llg
Enc.

cc: Mark Lowen, Lenity Architecture
Kristi Neznanski, Lenity Architecture
Dan Roach, Lenity Architecture

Section 1. Application Forms

- Site Plan Application
- Site Plan Checklist

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

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. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are ***paid in full*** to the Inspections Office, City of Portland Maine by method noted below:

☐ Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐ Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☒ I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

Applicant Signature: _____ Date: 9/17/15

I have provided digital copies and sent them on: _____ Date: 9/17/15

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.

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 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
(207) 874-8721

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

PROJECT NAME: **Portland Retirement Residence**

PROPOSED DEVELOPMENT ADDRESS:

802 Ocean Avenue

PROJECT DESCRIPTION:

Site Plan for 150 Unit Congregate Care Facility

CHART/BLOCK/LOT: **Map 411, Lot 7A, Map 416, Lots A6, A7 & A21**

PRELIMINARY PLAN **N/A** **(date)**

FINAL PLAN **9/17/15** **(date)**

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Lenity Architecture LLC c/o Mark Lowen OBO Business Name, if applicable: Hawthorne Development Group, LLC Address: 3150 Kettle Court SE City/State : Salem, OR Zip Code: 97301	**Applicant Contact Information** Work # 503-399-1090 Home# Cell # 503-586-4104 Fax# 503-399-0565 e-mail: markl@lenityarchitecture.com
Owner – (if different from Applicant) Name: Graves Hill Land Company, LLC Address: 16 Tiffany Lane City/State : Saco, ME Zip Code: 04702	**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: Lenity Architecture LLC c/o Mark Lowen Address: 3150 Kettle Court SE City/State : Salem, OR Zip Code: 97301	**Billing Information** Work # 503-399-1090 Cell # 503-586-4104 Fax# 503-399-0565 e-mail: markl@lenityarchitecture.com

Engineer	**Engineer Contact Information**
Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE	Work # 207-200-2074
Address: 75 John Roberts Road, Suite 1A	Cell # 207-939-1809 Fax# 207-856-2206
City/State : South Portland, ME Zip Code: 04106	e-mail: rmcsorley@sebagotechnics.com
Surveyor	**Surveyor Contact Information**
Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE	Work #
Address: Same as Above	Cell # Fax#
City/State : Zip Code:	e-mail:
Architect	**Architect Contact Information**
Name: Lenity architecture, c/o Mark Lowen	Work # 503-399-1090
Address: 3150 Kettle Court SE	Cell # 503-586-4104 Fax# 503-399-0565
City/State : Salem,OR Zip Code: 97301	e-mail: markl@lenitygroup.com
Attorney	**Attorney Contact Information**
Name: Hopkinson & Abdonndanza, c/o James Hopkinson	Work # 207-772-5845
Address: 511 Congress Street, Suite 801	Cell # Fax# 207-874-2330
City/State : Portland, ME Zip Code: 04101	e-mail: jhopkinson@hablaw.com

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Cash or Check payable to the City of Portland)

Level III Development (check applicable reviews)

___ Less than 50,000 sq. ft. ($500.00)
___ 50,000 - 100,000 sq. ft. ($1,000)
_X_ 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 ($40.00 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 ____ x $25/lot = _____
___ Site Location ($3,000, 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

APPLICATION SUBMISSION:

1. **All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the Electronic Plan and Document Submittal page of the City's website at http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal**

2. **In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.**

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. **One (1) full size site plans** that must be **folded.**
2. One (1) copies of all written materials as follows, unless otherwise noted:
   a. Application form that is completed and signed.
   b. Cover letter stating the nature of the project.
   c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Refer to the application checklist (attached) for a detailed list of submittal requirements.
Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), which includes the Subdivision Ordinance (Section 14-491) and the Site Plan Ordinance (Section 14-521). Portland's Land Use Code is on the City's web site: www.portlandmaine.gov Copies of the ordinances may be purchased through the Planning Division.

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:**
	9/17/15

PROJECT DATA

(The following information is required where applicable, in order complete the application)

Total Site Area	**442,875 R-5A, 798,184 Total** sq. ft.
Proposed Total Disturbed Area of the Site	**205,168** 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)	**0** sq. ft.
Impervious Area (Total Proposed)	**127,631** sq. ft.
Building Ground Floor Area and Total Floor Area	
Building Footprint (Total Existing)	**0** sq. ft.
Building Footprint (Total Proposed)	**39,869** sq. ft.
Building Floor Area (Total Existing)	**0** sq. ft.
Building Floor Area (Total Proposed)	**134,646** sq. ft.
Zoning	
Existing	**R-5A**
Proposed, if applicable	**R-5A**
Land Use	
Existing	**vacant**
Proposed	**150 suite congregate care facility**
Residential, if applicable	
# of Residential Units (Total Existing)	**0**
# of Residential Units (Total Proposed)	**150**
# of Lots (Total Proposed)	**N/A**
# of Affordable Housing Units (Total Proposed)	**N/A**
Proposed Bedroom Mix	
# of Efficiency Units (Total Proposed)	**57**
# of One-Bedroom Units (Total Proposed)	**78**
# of Two-Bedroom Units (Total Proposed)	**15**
# of Three-Bedroom Units (Total Proposed)	**N/A**
Parking Spaces	
# of Parking Spaces (Total Existing)	**0**
# of Parking Spaces (Total Proposed)	**102 including garages**
# of Handicapped Parking Spaces (Total Proposed)	**5**
Bicycle Parking Spaces	
# of Bicycle Spaces (Total Existing)	**0**
# of Bicycle Spaces (Total Proposed)	**None, Senior Housing**
Estimated Cost Of Project	**$18,000,000.00**

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. **N/A**
☒	☐	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 **N/A**
☒	☐	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 contined 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.

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, with corresponding curb lines;	
☒	☐	Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;	
☒	☐	Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;	
☒	☐	Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;	
☒	☐	Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;	
☒	☐	Location of all snow storage areas and/or a snow removal plan;	
☒	☐	A traffic control plan as detailed in Section 1 of the Technical Manual;	
☒	☐	Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);	
☒	☐	Location and proposed alteration to any watercourse;	
☒	☐	A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;	
☒	☐	Proposed buffers and preservation measures for wetlands;	
☒	☐	Existing soil conditions and location of test pits and test borings;	
☒	☐	Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;	
☒	☐	A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;	
☒	☐	Grading plan;	
☒	☐	Ground water protection measures;	
☒	☐	Existing and proposed sewer mains and connections;	

- Continued on next page -

☒	☐	Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
☒	☐	Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
☒	☐	Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
☒	☐	Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
☒	☐	Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
☐	☐	A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
☐	☐	A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
☒	☐	Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
☒	☐	An exterior lighting plan in accordance with Section 12 of the Technical Manual;
☒	☐	A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
☒	☐	Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
2. Hawthorn Development 9310 NE Vancouver Mall Drive, Vancouver, WA 98662, 360-213-1550
3. Name address, telephone number of architect
   Lenity Architecture, LLC, 3510 Kette Court SE, Salem OR 97301 503-399-1090
4. Proposed uses of any structures [NFPA and IBC classification]
5. Type V-A
6. Square footage of all structures [total and per story]
   1st flr- 39,869, 2nd flr - 31,552, 3rd flr - 32,911, 4th flr - 30,314 Total - 134,646 sf
7. Elevation of all structures
   4 story, 47' - 7 3/4"
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
   Shown on plan, NE corner of the building
10. Water main[s] size and location
    8" main
11. Access to all structures [min. 2 sides]
    Access to three sides
12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.
    Building to be sprinklered, details to be reviewed with building plans

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

Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,

E-mail:fjb@portlandmaine.gov

Date: **Revised 8/12/15**

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

Site Address: **802 Ocean Avenue**

Chart Block Lot Number: **Map 411, Lot A7 and Map 416, Lots A6, 17 and A21**

Proposed Use: **Congregate Care Facility**

Previous Use: **Vacant**

Existing Sanitary Flows: **0** GPD

Existing Process Flows: **0** GPD

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

Sanitary Gravity in Ocean 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: **Barbara Barhydt** Phone: **874-8699**

Owner/Developer Name: **Hawthorn Development Group, LLC**

Owner/Developer Address: **9310 NE Vancouver Mall Drive, Suite 200, Vancouver, WA 98662-8210**

Phone: **360-213-1550** Fax: **260-213-1540** E-mail: **robin.goins@hawret.com**

Engineering Consultant Name: **Sebago Technics, Inc. attn: Robert A. McSorley, P.E.**

Engineering Consultant Address: **75 John Roberts Road, Suite 1A, South Portland, ME 04106**

Phone: **200-2074** Fax: **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: **10,080** GPD

Peaking Factor/ Peak Times: **10,080 GPD / 16 hors/day / 60 min/hour x 6 = 63 GPM**

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:	**TBD**
Size of External Grease Interceptor:	**TBD**
Retention Time:	**TBD**
Peaking Factor/ Peak Times:	**TBD**

(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: **0** 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)***

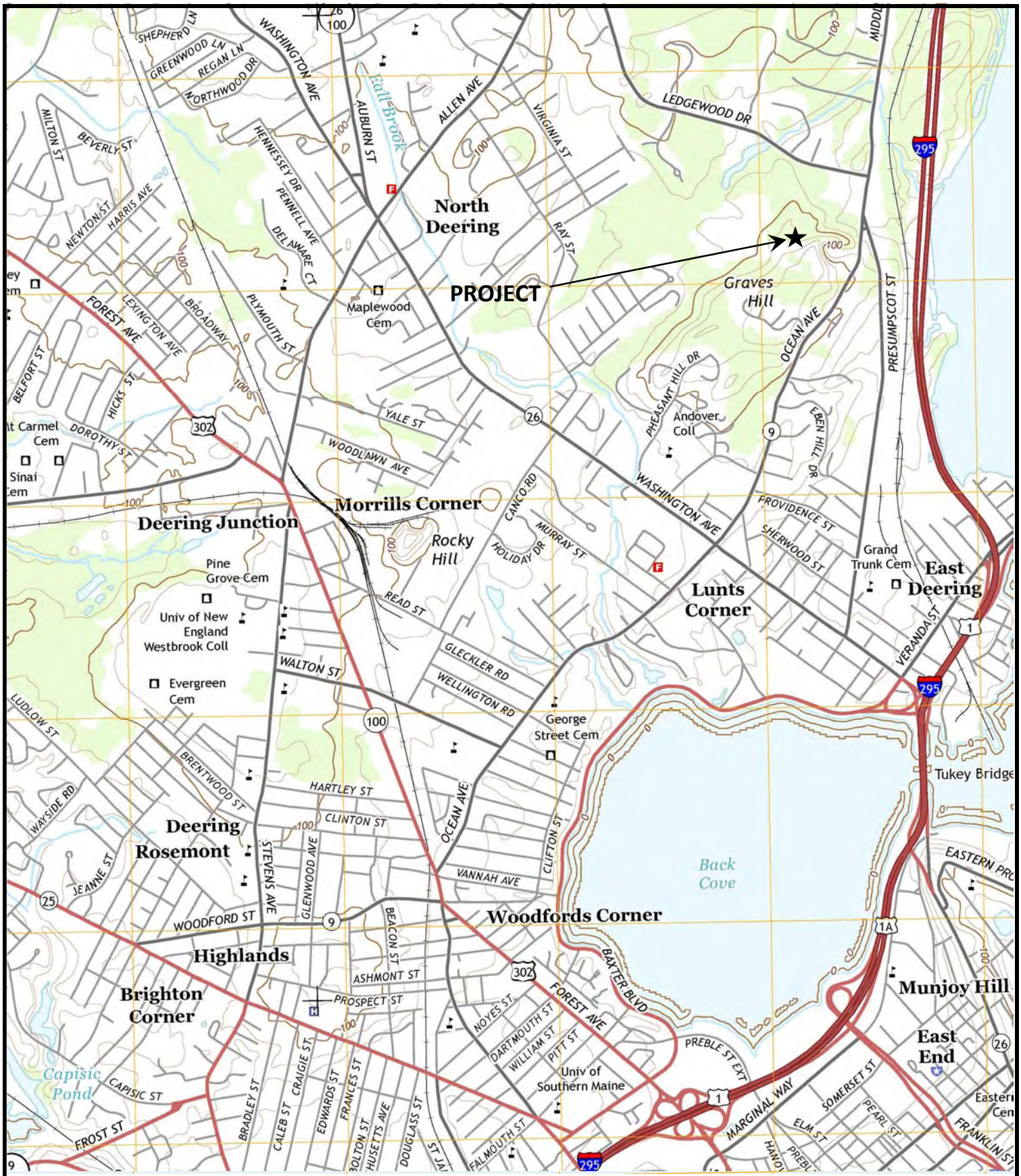
(Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided below, or attached, as a separate sheet)

Notes, Comments or Calculation

150 Residential Units (135 single units and 15 duplex units) and 2 Manager Units

135 units x 60 gpd/unit = 8,100 gpd, 15 duplex units x 120 gpd/unit = 1,800 gpd, 2 manager units x 90 gpd = 180 gpd. Total: 10,080 gpd.

Section 2. Location Map



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
(207) 200-2100

250 Goddard Rd. - Suite B
Lewiston, ME 04240
(207) 783-5656

SITE LOCATION MAP

OF PORTLAND RETIREMENT COMMUNITY

SCALE:	1"=2000'
DATE:	11/19/14
SHEET:	1 OF 1

LOCATION:
OCEAN AVENUE
PORTLAND, ME

FOR:
Hawthorn Retirement Group

Section 3. Tax Map

M8NE M9NW M9NE

M8SE O7NE

L8NE L9NW L9NE

413 E001

417 A009

417 A004

418 A006

204440

418 A003

418 A010

111686

418 A005

416A A002

411 A028

411 A007

76147

416 A006

193505

416 A021

416A A003

416A A001

852

14384

OCEANRIDGE CONDO

439085

422 B036

422 B055

422 B035

9531

422 B034

11809

17

422 B033

12807

21

422 B032

11933

23

422 B031

422 B050

422 B049

422 B048

RIDGE RD

OSPREY TER

OCEAN AVE

SUMMER PL

PROPERTY

1 inch = 50 feet

April 1 2012 fy 2013 Tax Map Index; http://www.portlandassessors.com/taxmaps.htm

Index Number - M9SW

M8SE M9SW M9SE

L8NE O7NE

PROPERTY

OCEAN AVE

792 - 822
793 - 831

840 - 876
859 - 875

834 - 838
833 - 837

784 - 790
783 - 791

748 - 762
747 - 761

2 - 72
1 - 69 RIDGE RD

SUMMER PL

2 - 72
1 - 71 ASHLEY LN

0 - 0 BRIARWOOD LN

EBEN HILL DR

165 - 232
166 - 231

OCEAN WOODS CONDO
277172

411 A007
416 A006
411 A028
416 A021
494553
416 A007
45210
416A A001
416A A003
422 B034
21
422 B033
11933
422 B032
22
422 B055
422 B050
422 B049
422 B031
20663
25
27
14219
422 B006
422 B014
15432
8328
422 B007
12709
422 B026
39720
422 B008
821
60113
422 B016
9865
423 A032
807
805
33695
423 A001
423 A002
416 A005
11764
804
416 A004
794
38099
416 A015
14687
416 A014
774
13957
416 A002
182245
416 A013
766
32948
412 A001
412 A008
416 A012
412 A006
39150
752
412 A021
412 A010
89858
48125
411 A001
416 A001
24
24
23
22
21
20
19
18
17
16
16
172498
423 A003
423 A006
11455
765
423 A004
B 17
B 18
423 A030
43
52
50
32
1 inch = 50 feet

L8SE L9SW Index Number - L9NW L9SE

April 1 2012 fy 2013 Tax Map Index; http://www.portlandassessors.com/taxmaps.htm

Section 4. Right, Title and Interest (Deed)

HAWTHORN DEVELOPMENT LLC
Real Estate and Acquisition Dept.
Vancouver, WA

OFFER AND CONTRACT TO PURCHASE REAL ESTATE

DATE: October 13, 2014

TO: Graves Hill Land Company LLC, 16 Tiffany Lane, Saco, Maine 04072, Owner of Record of the following described property in Portland, Cumberland County, Maine

THROUGH: Malone Commercial Brokers, 5 Moulton Street, Suite 3, Portland, Maine 04101, Joe Malone, Phone: 207-773-2554, Email: joe@malonecb.com; and Jennifer Small, Phone: 207-233-6782, Email: jennifer@malonecb.com.

Malone Commercial Brokers, 5 Moulton Street, Suite 3, Portland, Maine 04101, Mark Malone, Phone: 207-773-6000, Email: mark@malonecb.com.

The following constitutes a firm offer by HAWTHORN DEVELOPMENT LLC or its assignee ("Purchaser") to purchase property located in Portland, Maine, from GRAVES HILL LAND COMPANY LLC, the owner of record, ("Seller") under the following conditions:

1. PROPERTY DESCRIPTION

Approximately 18.3 acres of land with an address of 802 Ocean Avenue in Portland, Cumberland County, Maine ("the Property") as shown on Exhibit A.

The Property is further identified by Assessor's Parcel ID Number 411A007001.

2. TOTAL CONSIDERATION

[redacted]

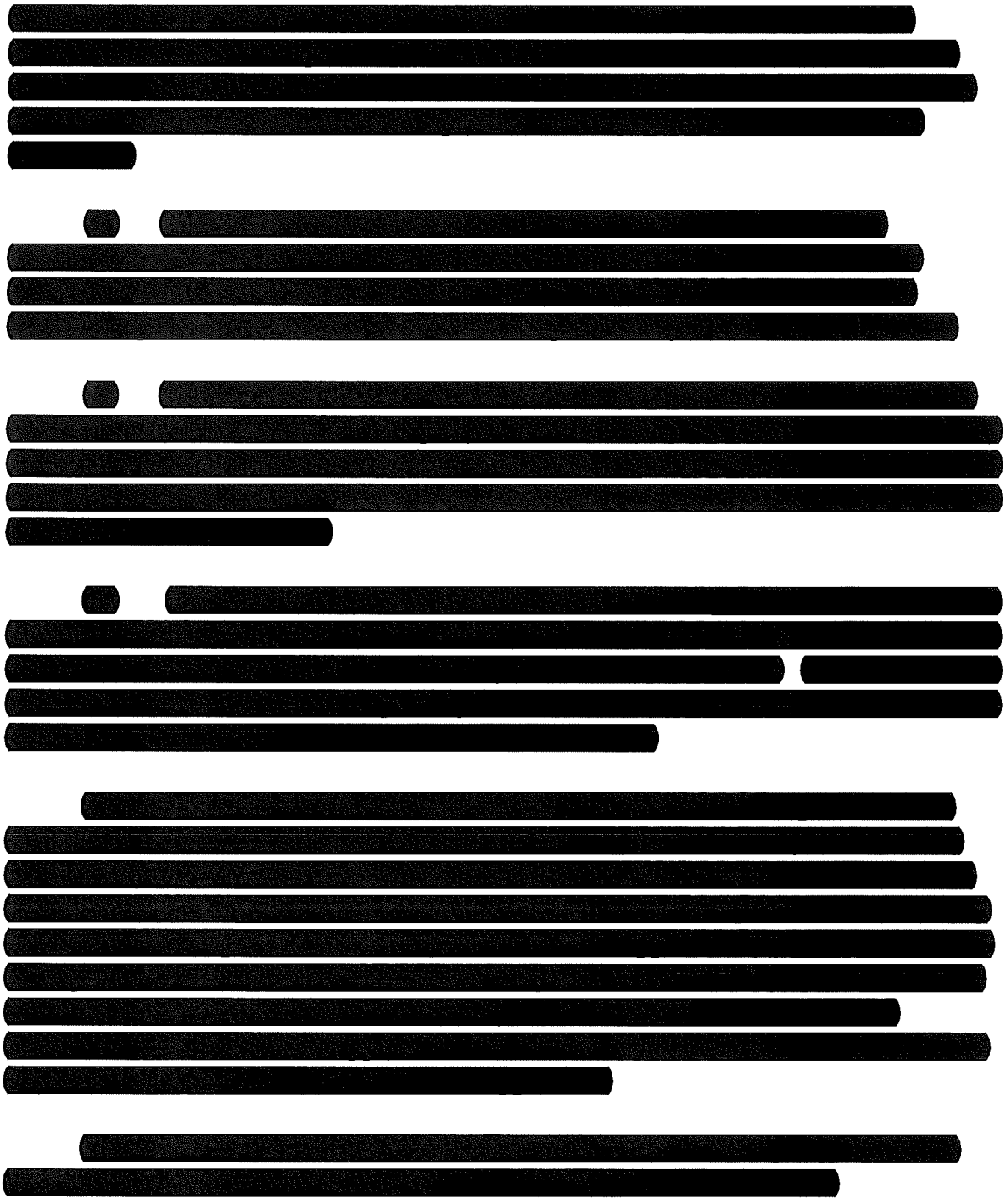
3. TERMS OF PAYMENT

[redacted]

4. CONDITIONS OF PURCHASE

Purchaser's obligation to close is subject to Purchaser's satisfaction of the following conditions at its sole discretion: [redacted]

[redacted]



[redacted]

[redacted]

[redacted]

[redacted]

[redacted] REPORT

A. As a courtesy, Purchaser will provide to Seller a written status report ("Status Report") outlining the known outstanding issues that relate to the entitlement process for Purchaser's intended use. [redacted]

[redacted]

6. CLOSING/ POST CLOSING

[redacted]

9. REMEDIES

IN THE EVENT OF PURCHASER'S DEFAULT UNDER THIS CONTRACT, AND PROVIDED THAT SELLER HAS FULLY PERFORMED ALL OF ITS OBLIGATIONS HEREUNDER, THE EARNEST MONEY SHALL BE PAID TO SELLER AS FULL LIQUIDATED DAMAGES AND PURCHASER SHALL BE RELEASED FROM ALL LIABILITY OR OBLIGATION HEREUNDER TO SELLER AND NO OTHER REMEDY, INCLUDING THE REMEDY OF SPECIFIC PERFORMANCE, SHALL BE AVAILABLE FOR PURCHASER'S BREACH OF THIS CONTRACT. PURCHASER AND SELLER ACKNOWLEDGE THAT IT WOULD BE DIFFICULT TO ASCERTAIN THE ACTUAL DAMAGES SUFFERED BY SELLER AS A RESULT OF ANY DEFAULT BY PURCHASER AND AGREE THAT SUCH LIQUIDATED DAMAGES ARE AN AGREED UPON REASONABLE ESTIMATE OF THE AMOUNT OF LOSS SELLER WOULD SUFFER AS A RESULT OF PURCHASER'S DEFAULT, AND ARE NOT INTENDED AS A PENALTY.

IF SELLER DEFAULTS AT CLOSING, THEN THE EARNEST MONEY AND ANY OTHER DEPOSITS THERETOFORE MADE BY PURCHASER SHALL BE RETURNED TO PURCHASER IMMEDIATELY AND PURCHASER MAY CLAIM DAMAGES AGAINST SELLER FOR THE AMOUNT NO GREATER THAN $25,000, OR, AT PURCHASER'S OPTION, PURCHASER MAY SEEK THE REMEDY OF SPECIFIC PERFORMANCE.

/s/ Myrle M. Davis_____ _____

Purchaser Seller

10. TERMINATION

Unless accepted by Seller in writing, this offer shall expire at 5:00 p.m. Pacific time, seven (7) days from the date of this letter.

Seller agrees that after acceptance of the offer contained herein and until the Contract is terminated, it shall not sell, contract to sell, nor enter into a letter of

intent or negotiate for the sale of Property to another party, and that there shall be no material change to the Property through the date of closing.

The parties hereby agree that copies of this document, and signatures, transmitted by telecopier (fax), and electronic mail (email) shall be for all purposes considered as originals. This Contract may be executed in multiple counterparts, each of which shall be deemed to be an original, but all of which, together, shall constitute one and the same instrument.

The ("Effective Date") of this Contract for the purposes of performance of all obligations is the date the escrow agent receipts this Contract after all parties execute this Contract.

If the time for the performance of any obligation or taking any action under this Contract expires on a Saturday, Sunday or legal holiday, the time for performance or taking such action will be extended to the next succeeding day which is not a Saturday, Sunday or legal holiday. Time is of the essence of this agreement.

Sincerely,

HAWTHORN DEVELOPMENT LLC
/s/ Myrle M. Davis
Myrle M. "Mick" Davis
Representative Agent for Purchaser

AGREED AND ACCEPTED:

Seller By:_____

Date:_____

By:_____

Date:_____

By:_____

Date:_____

ESCROW RECEIPT:

Escrow agent acknowledges receipt of the Contract on this date:

_____ (Effective Date) and earnest money in the

amount of $_____ in the form of _____

on _____.

Escrow Agent:_____

By:_____

Address:_____

_____

Phone:_____

Fax:_____

Email:_____

9. REMEDIES

IN THE EVENT OF PURCHASER'S DEFAULT UNDER THIS CONTRACT, AND PROVIDED THAT SELLER HAS FULLY PERFORMED ALL OF ITS OBLIGATIONS HEREUNDER, THE EARNEST MONEY SHALL BE PAID TO SELLER AS FULL LIQUIDATED DAMAGES AND PURCHASER SHALL BE RELEASED FROM ALL LIABILITY OR OBLIGATION HEREUNDER TO SELLER AND NO OTHER REMEDY, INCLUDING THE REMEDY OF SPECIFIC PERFORMANCE, SHALL BE AVAILABLE FOR PURCHASER'S BREACH OF THIS CONTRACT. PURCHASER AND SELLER ACKNOWLEDGE THAT IT WOULD BE DIFFICULT TO ASCERTAIN THE ACTUAL DAMAGES SUFFERED BY SELLER AS A RESULT OF ANY DEFAULT BY PURCHASER AND AGREE THAT SUCH LIQUIDATED DAMAGES ARE AN AGREED UPON REASONABLE ESTIMATE OF THE AMOUNT OF LOSS SELLER WOULD SUFFER AS A RESULT OF PURCHASER'S DEFAULT, AND ARE NOT INTENDED AS A PENALTY.

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/s/ Myrle M. Davis

Purchaser

Seller

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Sincerely,

HAWTHORN DEVELOPMENT LLC
/s/ Myrle M. Davis
Myrle M. "Mick" Davis
Representative Agent for Purchaser

AGREED AND ACCEPTED:

Seller By:_____

Date:_____

By:_____

Date:_____

By:_____

Date:_____

9. REMEDIES

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/s/ Myrle M. Davis
Purchaser

Seller

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Sincerely,

HAWTHORN DEVELOPMENT LLC
/s/ Myrle M. Davis
Myrle M. "Mick" Davis
Representative Agent for Purchaser

AGREED AND ACCEPTED:

Seller By:_____

Date: 10/17/14

By:_____

Date:_____

By:_____

Date:_____

EXISTING CONDITIONS

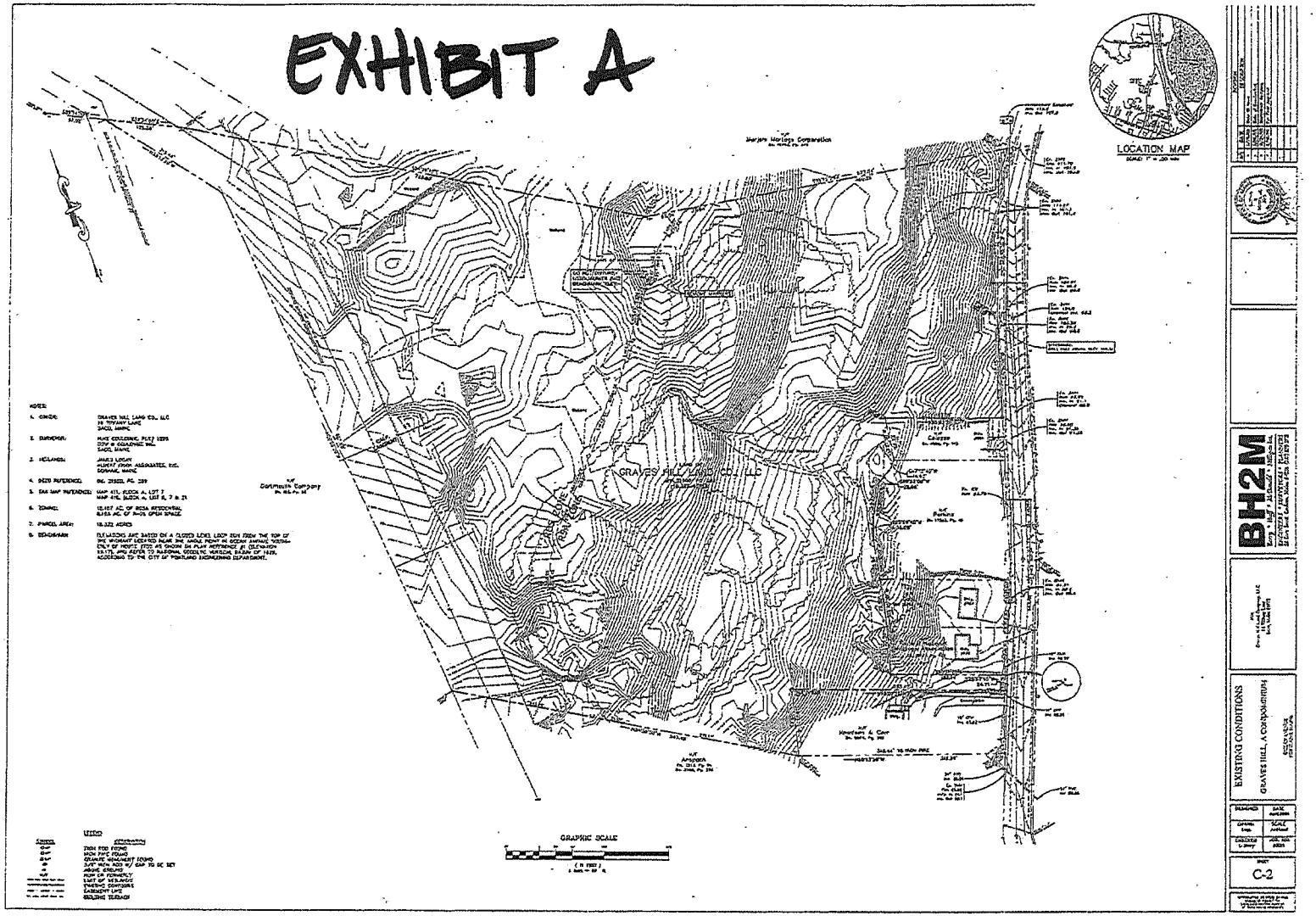
A full size electronic copy of this Existing Conditions Plan conducted in 2009 is available on request.

Contact broker for a copy and further details that may be available.

Broker:

Mark Malone, CCIM
(207) 773-6000 direct
(207) 358-7912 direct fax
mark@malonecb.com

EXHIBIT A



HAWTHORN DEV.

QUITCLAIM DEED WITH COVENANT

Leo J. Delicata and Jeanne B. Delicata, husband and wife, both of Portland, Cumberland County, Maine, for consideration paid, grant to

Graves Hill Land Company, L.L.C. a Maine Limited Liability Company with a principle place of business in Saco, York County, Maine

whose mailing address is:
16 Tiffany Lane, Saco, Maine 04072

with quitclaim covenants,

A certain lot or parcel of land comprising 18 acres more or less, located on the Northwesterly side of Ocean Avenue in Portland, Maine more particularly bounded and described on a survey plan entitled Plan Showing Boundary Survey and Topographic Survey made for Diane Doyle by Dow & Coulombe, Inc. Land Surveyors & Land Planners dated July 8, 2002 and recorded in the Cumberland County Registry of Deeds in Plan Book 204, Pages 293 and 294.

Meaning and intending to convey a portion of the real property described in a Deed from CRE I Real Estate Corp. to the Grantors herein dated August 14, 1992 and recorded in the Cumberland County Registry of Deeds in Book 10226 Page 236.

Witness our hands and seals this 1st day of July, 2004.

SIGNED, SEALED, AND DELIVERED
in the presence of

Leo J. Delicata

Jeanne B. Delicata

State of Maine
Cumberland, ss

July 1 2004

Personally appeared before me the above named Leo J. Delicata and Jeanne B. Delicata and acknowledged the foregoing instrument to be his or her free act and deed.

Notary Public SEAL

Received
Recorded Register of Deeds
Jul 02,2004 02:23:37P
Cumberland County
John B OBrien

JAMES B. BARNS
Notary Public, Maine
My Commission Expires October 26, 2008

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 2.86 acres of non-vegetated surface and therefore is subject to the State of Maine Stormwater Law. As this project is within the City of Portland, this review will be completed by the City under delegated review.

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.

SEBAGO
TECHNICS

RECEIVED
NOV 21 2014 *
1789-14
* More info rec'd
12/22/14.

November 19, 2014
14432

Earle G. Shettleworth, Jr., State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04039

Re: Site Plan Submittal – Portland Retirement Community
Portland, Maine

Dear Mr. Shettleworth:

On behalf of our client, Hawthorn Development Group, we are currently in the process of filling a site plan application to the City of Portland. Our client proposes a 142 suite retirement facility at 802 Ocean Avenue. The proposed building will be approximately 4 stories or approximately 50' high at roof peak from finished grade. This proposed project will replace one that has been previously approved by the City for another developer for two ten story condominium buildings.

We request that the Maine Historical Preservation Commission review its files for any known historical sites, structures or archeological sites that have been identified with the vicinity of the proposed project. The response obtained from the Commission is required for the site plan approval process with the City and approvals from other jurisdictional agencies.

I have included a copy of the USGS quadrangle and a plan depicting the proposed development on the property. If you have any questions on this project, do not hesitate to contact me.

Sincerely,

SEBAGO TECHNICS, INC.

Robert A. McSorley, P.E.
Senior Project Manager

RAM/ram:llg
Enc.

cc: Mark Lowen, Lenity Architecture

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney,
Deputy State Historic Preservation Officer
Maine Historic Preservation Commission

1/2/15
Date

75 John Roberts Road – Suite 1A, South Portland, ME 04106-6963 • 207-200-2100 • Fax: 207-856-2206

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

August 25, 2015

Robert McSorley
Sebago Technics
75 John Roberts Road, Suite 1A
South Portland, ME 04016

RE: Information Request - Portland Retirement Community, Portland

Dear Robert:

Per your request received July 27, 2015, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *Portland Retirement Community Project* in Portland. For purposes of this review, we are assuming that the proposed development will also include the forested portions of the project search area.

Our Department has not mapped any Essential 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, four species are listed as Special Concern: red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and tri-colored bat (*Perimyotis subflavus*). The three *Myotis* species of bats in Maine will soon be protected under Maine's Endangered Species Act (MESA) and will be afforded special protection against activities that may cause "Take" (kill or cause death), "harassment" (create injury or significantly disrupt normal behavior patterns), and other adverse actions. MDIFW has the legal right, power, and authority to enforce MESA under 12 M.R.S § 12805. 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).

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. Therefore, we recommend that you contact and will defer to any guidance and recommendations provided by the U.S. Fish and Wildlife Service Maine Field Office (Wende Mahaney, 207-866-3344), as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act.

Significant Wildlife Habitat

At this time, MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs within the project area, which include Waterfowl and Wading Bird Habitats, Deer Wintering Areas, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential impacts to off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, our Department will need to verify vernal pool data sheets prior to final determination of significance.

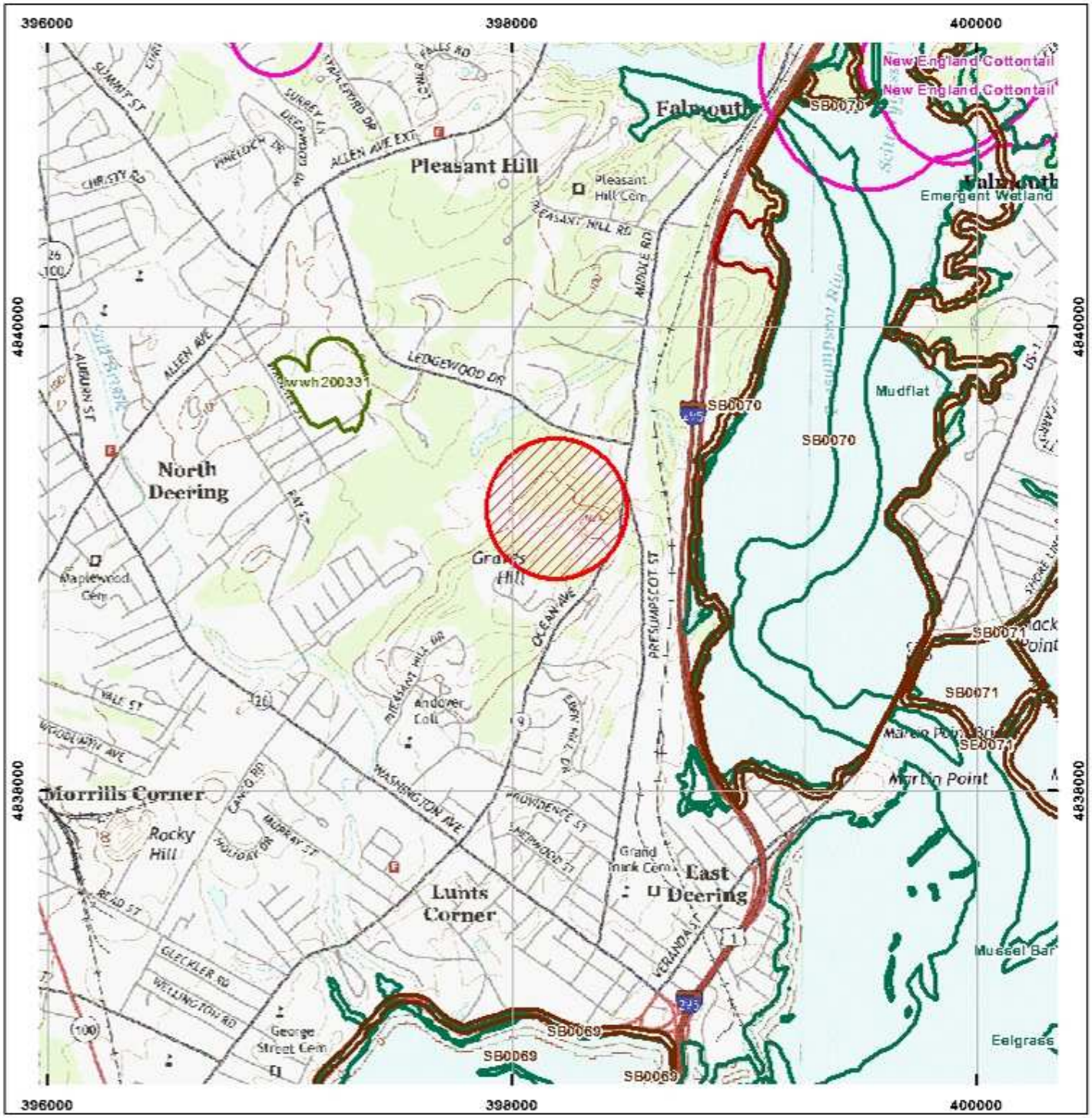
This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,



John Perry
Environmental Review Coordinator



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: ER Tool Test (Version 1)

Maine Department of Inland Fisheries and Wildlife

Miles

0 0.125 0.25 0.5 0.75 1

Projection: UTM, NAD83, Zone 19N

Date: 8/25/2015

- ProjectPoints
- ProjectLines
- ProjectPolys
- ProjectSearchAreas
- Deer Winter Area
- IWRC p-fw
- Cooperative DWAs
- Seabird Nesting Islands
- Snowmobile Areas
- Inland Waterfowl/Wading Bird
- Shoreland Zoning_fwwh
- Tidal Waterfowl/Wading Bird
- Significant Vernal Pools
- Environmental Review Polygons
- Roseate Tern
- Piping Plover/Least Tern
- Aquatic ETSc (25 mi review)
- Rare Mussels (5 mi review)
- Maine Heritage Fish Waters
- Arctic Char Habitat
- E. Brook Trout Joint Venture Subwatershed Classification
- Redfin Pickerel/Swamp Darter Habitats (buffer100ft)
- Special Concern-occupied habitats (100ft buffer)
- Wild Lake Trout Habitats



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

July 27, 2015

VIA ELECTRONIC MAIL

Robert McSorley
Sebago Technics
75 John Roberts Road, Suite 1A
South Portland, ME 04106

Re: Rare and exemplary botanical features in proximity to: Project 14432, Portland Retirement Community, Portland, Maine

Dear Mr. McSorley:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received July 27, 2015 for information on the presence of rare or unique botanical features documented from the vicinity of the project site 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.

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: #14432, Portland Retirement Community, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Allegheny Vine						
	T	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	2009-09-16	21	Rocky coastal (non-forested, upland)
Bottlebrush Grass						
	SC	S3	G5	1905-09-13	10	Hardwood to mixed forest (forest, upland)
Broad Beech Fern						
	SC	S2	G5	1872-08	15	Hardwood to mixed forest (forest, upland)
Columbia Water-meal						
	SC	S2	G5	2002-08-04	2	Open water (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)
Foxtail Bog-clubmoss						
	E	S1	G5	2014-09-24	1	<null>
Great Blue Lobelia						

Rare and Exemplary Botanical Features within 4 miles of
Project: #14432, Portland Retirement Community, 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?	2011-08-04	19	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)
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-laurel						
	SC	S2	G5	1985-08-01	13	Conifer forest (forest, upland),Hardwood to mixed forest (forest, upland)
Mountain Honeysuckle						
	E	S2	G5	2014-08-03	14	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S2	G5	2007-07-30	10	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Pale Green Orchis						
	SC	S2	G4T4Q	1907-07-05	27	Non-tidal rivershore (non-forested, seasonally wet),Open wetland, not coastal nor rivershore (non-forested, wetland)
Palmate-leaved Violet						
	PE	SH	G5	1908	1	Hardwood to mixed forest (forest, upland)
Screwstem						

Rare and Exemplary Botanical Features within 4 miles of
Project: #14432, Portland Retirement Community, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	T	S1	G5	2014-09-24	17	Coastal non-tidal wetland (non-forested, wetland)
Slender Knotweed						
	PE	SH	G5	1902-09-07	1	Dry barrens (partly forested, upland)
Smooth Winterberry Holly						
	SC	S3	G5	2010-06-13	32	Forested wetland
Spotted Wintergreen						
	E	S2	G5	1991-09	11	Conifer forest (forest, upland),Hardwood to mixed forest (forest, upland)
Tidal Marsh Estuary Ecosystem						
	<null>	S3	GNR	2011-08-25	8	Tidal wetland (non-forested, wetland)
Upper Floodplain Hardwood Forest						
	<null>	S3	GNR	2010-06-23	20	Forested wetland
Upright Bindweed						
	T	S2	G4G5	2007-06-28	5	Dry barrens (partly forested, upland),Old field/roadside (non-forested, wetland or upland)
Variable Sedge						
	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)
	E	S1	G3	2012-08-09	1	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	2006-07-12	6	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	2014-09-24	4	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)

Rare and Exemplary Botanical Features within 4 miles of
Project: #14432, Portland Retirement Community, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Wild Garlic						
	SC	S2	G5	1918-07-16	6	Forested wetland,Hardwood to mixed forest (forest, upland)
Wild Leek						
	SC	S3	G5	1978-06-28	17	Hardwood to mixed forest (forest, upland),Forested wetland
	SC	S3	G5	2003-06-17	42	Hardwood to mixed forest (forest, upland),Forested wetland
	SC	S3	G5	2009-07-12	26	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

Section 6. Zoning Assessment

Zoning Assessment

On June 15, 2015, the City of Portland City Council approved a text amendment to Chapter 14, Land Use that included the definition for a living unit and changes to the R-5A Zoning District relative adding congregate care as a permitted use, net residential land area calculation and other dimensional criteria.

On July 20, 2015, the City of Portland City Council approved a rezoning of the subject property to remove an existing contract zone and to zone the property per the underlying R-5A and R-OS zoning Districts. This project will develop the R-5A portion of the property. As stated above, the proposed 150 Unit Congregate Care Facility is an allowed use under the R-5A zoning. The property is not located within a shoreland or flood plain area. It does not appear that the property is subject to any of the requirements of Div. 25, Space and Bulk Regulations and Exceptions. Other zoning requirements are as follows:

Net Residential Calculation		
Total Property Area	442,875	SF
Per Section 14-47 definition of net land area as set forth in Sec. 14-130 Subtract the following from the gross area		
Existing watercourses	0	SF
Wetlands	6,481	SF
Slopes > 25%	32,650	SF
Subtotal deductions	39,131	SF
Net Area	403,744	SF
Min. Area per living unit	1,600	SF/Unit
Net Density Allowed	403,744 SF/1,600 SF/Unit	
	252	Units
Proposed	**150**	**Units**

Dimensional Requirements		
	Required	**Proposed**
Minimum Frontage	50 FT	427.05 FT
Minimum Front Yard	25 FT	114.07 FT
Minimum Rear Yard	25 FT	62.78 FT
Minimum Side Yard	16 FT	25 FT (garage)/51.79 (build)
Maximum Structure Height	55 FT	Approx. 47 FT 8 IN
Maximum Lot Coverage	30%	28.8%
Minimum Lot Width	60 FT	>>60 FT
Minimum Building Setback from external subdivision property lines (building length < 100 feet)	25 FT	25 FT (garage)
Minimum Building Setback from external subdivision property lines (building length > 100 feet)	35 FT	51.79/114.07 FT (build)
Minimum Recreation Open Space	200 SF/Unit	>200 SF/Unit*
Parking (1 space/3 Living Units)	50 spaces	102 spaces

*Lawns, Garden Area, Walking Paths and Site Trails

Section 9. Evidence of Financial and Technical Ability

Evidence of Financial and Technical Ability

The project is being proposed by Hawthorn Development Group, LLC. Hawthorn and its predecessor, Holiday Retirement Corporation, has developed and managed approximately 375 of these facilities within the United States and abroad. Hawthorn is a family owned business that has a long standing relationship in development of these projects with Lenity Architecture and its predecessor, Curry Brandaw Architects, and Colson and Colson, General Contractors, both of Salem, OR. This group has successfully developed and managed Canco Woods in Portland and Sunbury Village/Winterberry Village in Bangor.

Sebago Technics, Inc. is a local employee owned firm that has partnered with this development group to design, permit and complete numerous projects in New England including Canco Woods and Sunbury Village/Winterberry Village and projects in York, Maine; Derry, New Hampshire; and Beverly and Tewksbury, Massachusetts.

Information relative to Hawthorn Development Group and Sebago Technics, Inc. are enclosed.

HAWTHORN
RETIREMENT GROUP



www.seniorlivinginstyle.com

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Company Overview

Hawthorn Retirement Group offers management and consulting services to retirement, personal care, assisted living, and memory care communities.

- Currently the company has 31 facilities in operation consisting of 3,447 rentable units with 5 other facilities under construction and 9 new sites in various stages of development in North America and UK.
- Of the 31 existing facilities, 19 are stand alone independent living facilities and 12 are assisted living facilities or facilities with higher care components.
- Geographically Hawthorn Retirement Group's communities cover 13 States in the US, 3 provinces in Canada and 3 locations in UK.
- Of the 28 facilities in its North American portfolio, 10 have been opened for less than a year with an average occupancy of 52% for the portfolio. The "More than 12 Months" portfolio of 18 facilities boasts an average occupancy of 91% with 1/3 of the portfolio 100% occupied and more than 50% of them at or above 95% occupancy.

Company History & Philosophy

Developing senior living options is not only about construction and design, but about bringing people together and establishing a real sense of community, connection, and friendship. In 2000, a group sharing these ideals formalized Hawthorn Retirement Group to pursue the development and operation of senior communities throughout the U.S. and abroad.

The present group of Hawthorn owners and operators are continuing a legacy of quality while providing housing and health support services to seniors around the world. As Hawthorn continues to develop and manage senior communities, its members continue to draw from its roots while building new concepts and designs for the future in senior living.

Hawthorn Retirement Group Mission Statement

At Hawthorn Retirement Group, our caring concern for our residents is the foundation that leads to outstanding resident services. As contributing members of the communities we serve, what is most important is that we love our residents.

Management Services

Accounting Services
Hawthorn Retirement Group offers complete accounting services to the communities managed. Services provided include accounts payable, accounts receivable, payroll, monthly and annual financial statements including balance sheets and income statements. Hawthorn assists with the annual budgeting process with the communities. Additionally, variance reporting is provided to the communities to assist in evaluating financial performance to the communities and owners on a monthly basis.

Food Service
Hawthorn Retirement Group coordinates all dietary services for the communities managed. Including but not limited to menus, daily dietary services, vendor contracts, safety systems and cost control systems. A regional chef is assigned to each community to provide education, oversight and training as necessary.

Human Resources Services
Hawthorn Retirement Group coordinates human resources functions for the communities managed, including all employee benefits, workers' compensation claims, and formal employee complaints. The Hawthorn staff is available to assist with employee recruitment, retention and counseling, as well as, to coordinate and implement the employee orientation and continuing education components of the Hawthorn Operating System.

Health Services
Hawthorn Retirement Group offers extensive health services support to the communities managed. The Hawthorn health services staff is available to advise and assist with education and training of all licensed nurses, medication assistants and resident assistants on staff. Additionally, Health Services will coordinate and implement the effective use of all health services components of the Hawthorn Operating System.

Maintenance Services
Hawthorn Retirement Group coordinates all maintenance services for the communities managed. This includes all issues regarding landscaping, sprinkler systems, pest elimination, snow removal, elevators, HVAC, emergency light systems, smoke detectors, paint, carpet, tile, cabinets, and vehicles.

Management Services

Marketing Services

Hawthorn Retirement Group offers comprehensive marketing services to the communities managed; including advertising, promotional brochures, development, utilization and implementation of marketing plans. Director of Marketing and the Regional Manager for the community are available to coordinate all marketing components of the Hawthorn Management Operating System.

Regional Manager Services

Hawthorn Retirement Group provides a Regional Manager to each community managed. Regional Manager conducts site visits on a routine basis and also is available 24 hours a day, seven days a week for telephone consultation. RM works closely with the Community Manager or Administrator to focus on revenue, expense, marketing, quality assurance, and resident satisfaction issues.

Regulatory Compliance Services

Hawthorn Retirement Group offers extensive assistance and oversight to insure compliance with federal and state rules, regulations, codes, and statutes for communities managed. The Hawthorn Operating System is state specific with respect to policies and procedures required in each state. Facility licensure, both initial or renewal is coordinated by Hawthorn. Also, assistance is provided to communities preparing for annual or other routine inspections by regulatory agencies. Any necessary or required response to these inspections is coordinated by Hawthorn...

Risk Management Services

Hawthorn Retirement Group coordinates all risk management services to communities managed.

Harvest Development LLC

Harvest Development LLC ("Harvest") was formed in 2007 following the sale of Holiday Retirement Corp. to manage their joint venture opportunities with the new Holiday, as well as, to provide a vehicle for other real estate related activities of the principals.

- Harvest is the successor to Colson & Colson Construction Co. (C&C) as the development and holding company for the key principals' various ownership interests. With over 40 years history, C&C has successfully developed and constructed approximately 300 retirement residences throughout North America.
- Harvest is led by Norm Brenden (President) and Pat Kennedy (CEO), two of the former principals of Holiday Retirement/Colson et al group.
- Mr. Brenden served as the Executive Vice President and CFO at various times with the original Holiday and was instrumental in Holiday's portfolio growth to over 330 communities leading up to the sale. He is responsible for all real estate related activities at Harvest Development LLC and Hawthorns Retirement Group including the coordination of construction, development and equity investments.
- Mr. Kennedy has an extensive legal background in structuring business transactions and reorganizations. While being responsible for the original Holiday's International operations, he also served as the interim CEO of Alterra Healthcare Corporation from November 2001 to November 2003. Guiding the company through a financial restructuring. Mr. Kennedy is responsible for the relationship management of the new Holiday Retirement group, overseas development and entity formation activities of Harvest.
- Harvest's mission is to continue to develop and construct new retirement communities, which are owned by separate partnerships or limited liability companies controlled by the principals of the company.
- Colson & Colson General Contractor, Inc., ("GC") the contractor for all new projects developed by Harvest. GC is regularly ranked by Builder Magazine as one of the top 10 multifamily builders in the United States.
- Over their respective careers since the early 1970's, companies led by the key principals have either built or acquired numerous senior housing communities representing more than $6.0 billion in value.

Related Entities

Management Entity

Hawthorn Retirement Group
as Management Company
Management company for all owned retirement residences and 3rd party management contracts

Independent Living Operations
Real Estate Partnerships
&
Limited Liability Companies

Assisted Living Operations
Real Estate Partnerships
&
Limited Liability Companies

Building and Development Entities

Harvest Development LLC
Development Company
Holding Company

Colson & Colson General Contractor, Inc.
General Contractor

The Davis Company
Affiliate
Site Identification & Acquisition

Lenity Group
Affiliate
Zoning & Architectural Design

Community Location Map



HAWTHORN RETIREMENT GROUP

Community Listing

UNITED STATES

ARIZONA (1)	
Mountain View Gardens	Sierra Vista, AZ
CALIFORNIA (6)	
Deer Park	Novato, CA
Feather Canyon	Paradise, CA
Palms At Bonaventure AL & MC	Ventura, CA
Quail Lodge	Antioch, CA
Scholl Canyon Estates	Glendale, CA
Waterford Terrace	La Mesa, CA
COLORADO (1)	
Summit Glen	Colorado Springs, CO
FLORIDA (2)	
Salishan (Under Construction)	Spring Hill, FL
Steeplechase	Oxford, FL
IDAHO (1)	
Salmon Creek	Boise, ID
MAINE (2)	
Birchwoods At Canco Assisted Living	Portland, ME
Winterberry Heights AL & MC	Bangor, ME
NEW MEXICO (1)	
Paloma Landing	Albuquerque, NM
NORTH CAROLINA (2)	
Oak Park	Salisbury, NC
Carolina Estates	Greensboro, NC
OHIO (3)	
Mulberry Gardens Retirement & Assisted Living	Munroe Falls, OH
Amber Park Assisted Living	Pickerington, OH
Parker Place	Mentor, OH
OREGON (4)	
Edgewood Point Assisted Living	Beaverton, OR
Somerset Assisted Living	Gladstone, OR
Somerset Lodge	Gladstone, OR
Stoneybrook Assisted Living	Corvallis, OR
TEXAS (1)	
Bentley Manor Assisted Living	Dallas, TX
VIRGINIA (1)	
Chesterfield Heights	Midlothian, VA
WASHINGTON (1)	
Charlton Place Assisted Living	Tacoma, WA

26 PROPERTIES in 13 STATES — **UNITED STATES**

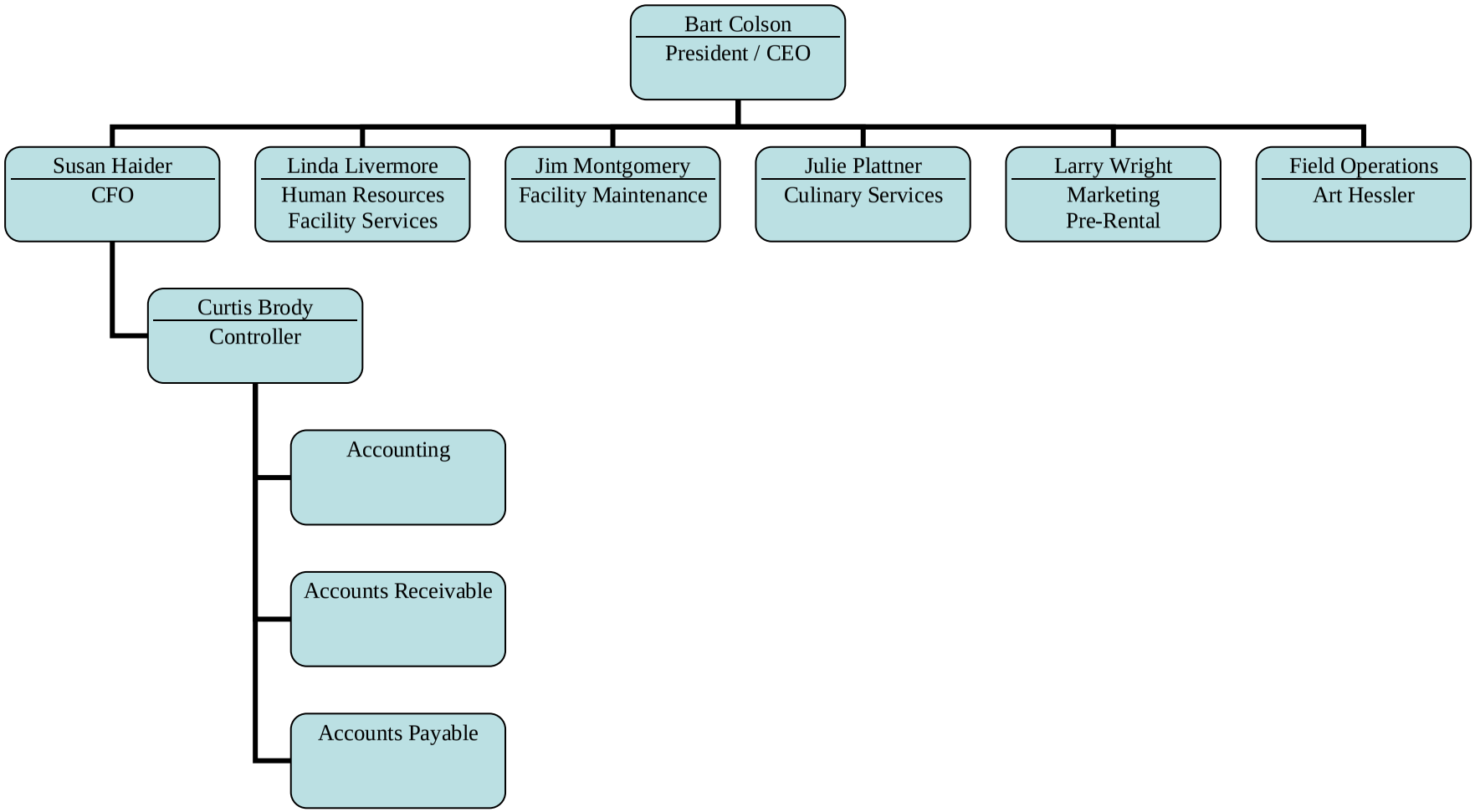
CANADA

QUEBEC (1)	
St. Patrick'S	Quebec City, QC
ONTARIO (2)	
Guelph Lake Commons	Guelph, ON
Rosewood Estates (Under Construction)	Coubourg, ON
SASKATCHEWAN (1)	
Victoria Park Personal Care Community	Regina, SK

4 PROPERTIES IN 3 PROVINCES — **CANADA**

TOTAL NORTH AMERICA PORTFOLIO - 30 PROPERTIES

Organizational Chart



HAWTHORN RETIREMENT GROUP

Facility Number	Facility Name	Units	Phone Number	Street	City, State Zip
	ARIZONA (4)				
544	DESERT SPRINGS	125	(520) 219-8100	30 WEST LAMBERT LANE	ORO VALLEY, AZ 85737
561	ESTRELLA ESTATES *(under construction)*	128	(623) 535-9195	14930 WEST WIGWAM BLVD	GOODYEAR, AZ 85395
525	MOUNTAIN VIEW GARDENS	118	(520) 459-1898	3477 RODEO DRIVE	SIERRA VISTA, AZ 85635
542	PEAKS AT SANTA RITA, THE	196	(520) 777-4800	661 W. CALLE TORRES BLANCAS	GREEN VALLEY, AZ 85614
	CALIFORNIA (5)				
538	CAMDEN SPRINGS	115	(916) 714-6565	8476 SHELDON ROAD	ELK GROVE, CA 95624
522	FEATHER CANYON	126	(530) 877-2207	5900 CANYON VIEW DRIVE	PARADISE, CA 95969
217	PALMS AT BONAVENTURE ASSISTED LIVING & MEMORY CARE	97	(805) 647-0616	111 NORTH WELLS ROAD	VENTURA, CA 93004
556	PALMS AT LA QUINTA, THE *(under construction)*	140	(760) 345-0022	45190 SEELEY DRIVE	LA QUINTA, CA 92253
523	SCHOLL CANYON ESTATES	96	(818) 951-3830	1551 E. CHEVY CHASE DRIVE	GLENDALE, CA 91206
	COLORADO (1)				
528	SUMMIT GLEN	119	(719) 380-1409	4825 OLD FARM DRIVE	COLORADO SPRINGS, CO 80917
	FLORIDA (5)				
548	CARRIAGE HOUSE, THE	130	(352) 330-5987	4680 BELLWETHER LANE	OXFORD, FL 34484
570	CYPRESS SPRINGS *(under construction)*	136	(941) 366-6870	9085 TOWN CENTER PARKWAY	BRADENTON, FL 34202
557	ORCHARD HEIGHTS	124	(352) 242-2235	3650 SOUTH HIGHWAY 27	CLERMONT, FL 34711
536	SALISHAN	118	(352) 263-2300	191 ASTAIRE LANE	SPRING HILL, FL 34609
534	STEEPLECHASE RETIREMENT RESIDENCE	118	(352) 259-0493	12029 COUNTY ROAD 103	OXFORD, FL 34484
	GEORGIA (2)				
559	ASHWOOD MEADOWS *(under construction)*	126	(770) 476-4429	11190 MEDLOCK BRIDGE ROAD	JOHNS CREEK, GA 30097
547	COTTONWOOD ESTATES	118	(678) 242-0334	255 VAUGHAN DRIVE	ALPHARETTA, GA 30009
	IDAHO (1)				
531	SALMON CREEK	118	(208) 938-5529	4890 N CLOVERDALE ROAD	BOISE, ID 83713
	INDIANA (1)				
555	NORTHRIDGE	124	(317) 776-1980	14532 ALLISONVILLE ROAD	FISHERS, IN 46038
	KANSAS (1)				
541	MEADOWLARK ESTATES	124	(785) 842-2400	4430 BAUER FARM DRIVE	LAWRENCE, KS 66049
	MAINE (2)				
214	BIRCHWOODS AT CANCO ASSISTED LIVING	84	(207) 772-1080	86 HOLIDAY DRIVE	PORTLAND, ME 04103
219	WINTERBERRY HEIGHTS ASSISTED LIVING & MEMORY CARE	92	(207) 942-6002	932 OHIO STREET	BANGOR, ME 04401
	MASSACHUSETTS (4)				
540	COLONIAL GARDENS	173	(978) 922-1203	105 CHERRY HILL DRIVE	BEVERLY, MA 01915
564	HEATHERWOOD *(under construction)*	126	(978) 851-2063	1624 MAIN STREET	TEWKSBURY, MA 01876
551	HIGHLANDS, THE	124	(508) 898-3000	129 E MAIN STREET	WESTBOROUGH, MA 01581
567	MAGNOLIA HEIGHTS *(under construction)*	136	(757) 312-0003	485 EAST CENTRAL STREET	FRANKLIN, MA 02038

Facility Number	Facility Name	Units	Phone Number	Street	City, State Zip
	NEW MEXICO (2)				
524	PALOMA LANDING	118	(505) 243-1979	8301 PALOMAS AVENUE NE	ALBUQUERQUE, NM 87109
549	RIO GRANDE, THE	131	(505) 994-2800	2331 WESTSIDE BLVD SE	RIO RANCHO, NM 87124
	NORTH CAROLINA (5)				
539	BELLA VISTA	120	(828) 255-8255	55 PINEY MOUNTAIN DRIVE	ASHEVILLE, NC 28805
533	CAROLINA ESTATES	118	(336) 282-6133	4434 OLD BATTLEGROUND ROAD	GREENSBORO, NC 27410
529	OAK PARK RETIREMENT	118	(704) 636-4600	548 WHITE OAKS DRIVE	SALISBURY, NC 28147
537	SOUTHERN PINES	124	(910) 692-3367	205 SE SERVICE ROAD	SOUTHERN PINES, NC 28387
553	WHISPERING PINES	118	(919) 870-0222	7501 LEAD MINE ROAD	RALEIGH, NC 27615
	OHIO (3)				
220	AMBER PARK ASSISTED LIVING	86	(614) 834-3113	401 HILL RD NORTH	PICKERINGTON, OH 43147-0189
210	MULBERRY GARDENS ASSISTED LIVING	86	(330) 634-9919	395 SOUTH MAIN STREET	MUNROE FALLS, OH 44262
530	PARKER PLACE	118	(440) 255-0828	7960 CENTER STREET	MENTOR, OH 44060
	OREGON (5)				
207	EDGEWOOD POINT ASSISTED LIVING & MEMORY CARE	79	(503) 671-9474	7733 SW SCHOLLS FERRY ROAD	BEAVERTON, OR 97008
565	GLENMOORE	125	(503) 698-3555	12154 SE 114TH CT	HAPPY VALLEY, OR 97086
202	SOMERSET ASSISTED LIVING	86	(503) 723-7868	8360 CASON ROAD	GLADSTONE, OR 97027
507	SOMERSET LODGE	122	(503) 657-5659	8330 CASON ROAD	GLADSTONE, OR 97027
201	STONEYBROOK ASSISTED LIVING	85	(541) 758-2026	4650 SW HOLLYHOCK CIRCLE	CORVALLIS, OR 97333
	PENNSYLVANIA (1)				
546	STERLING HEIGHTS	133	(610) 868-4600	3500 FAIRVIEW STREET	BETHLEHEM, PA 18017
	SOUTH CAROLINA (1)				
543	SUMMERVILLE ESTATES	124	(843) 873-3337	704 CENTRAL AVENUE	SUMMERVILLE, SC 29483
	TEXAS (4)				
206	ACADIA ASSISTED LIVING *(formerly Bently Manor)*	88	(972) 247-2266	3344 FOREST LANE	DALLAS, TX 75234
550	LIBERTY HEIGHTS	118	(972) 722-5129	963 WEST YELLOW JACKET LANE	ROCKWALL, TX 75087
560	OAKS, THE *(under construction)*	136	(512) 863-7788	3720 WILLIAMS DRIVE	GEORGETOWN, TX 78628
552	PIONEER RIDGE	126	(972) 547-6800	7210 LINKSIDE POINT DRIVE	MCKINNEY, TX 75071
	VIRGINIA (1)				
532	CHESTERFIELD HEIGHTS	118	(804) 379-2768	901 MADRONA STREET	MIDLOTHIAN, VA 23114
	ONTARIO (4)				
554	CEDARVIEW	124	(519) 602-0282	511 FINKLE STREET	WOODSTOCK, ON N4V 0C4
527	GUELPH LAKE COMMONS	123	(519) 780-5253	520 VICTORIA ROAD NORTH	GUELPH, ON N1E 0E6
545	HERITAGE MEADOWS	128	(519) 620-9999	208 HESPELER ROAD	CAMBRIDGE, ON N1R 0A5
535	ROSEWOOD ESTATES	118	(905) 373-5000	255 DENSMORE ROAD	COBOURG, ON K9A 0E5
	SASKATCHEWAN (1)				
218	VICTORIA PARK PERSONAL CARE COMMUNITY	81	(306) 522-4300	2400 E ARENS ROAD	REGINA, SK S4V 3G6

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

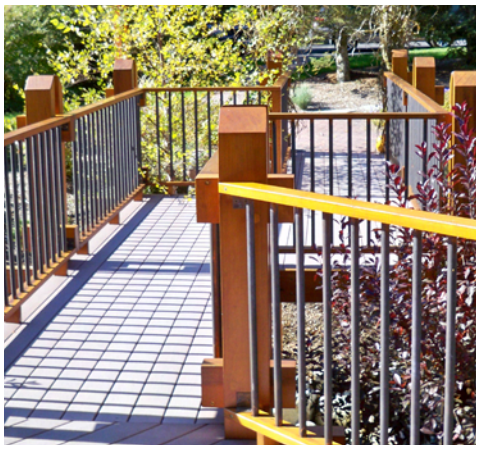
An Introduction



75 JOHN ROBERTS ROAD, SUITE 1A, SOUTH PORTLAND, MAINE 04106-6963 ▪ SEBAGOTECHNICS.COM

About Us







What Sets Us Apart?

Approach
Our approach to project delivery provides a single point of contact, responsive scheduling and cost efficiency.

Reputation
Sebago Technics is recognized as a firm that excels in the permitting of projects through experienced knowledge and excellent reputation.

Ownership
Employee ownership results in improved responsiveness, commitment and accountability throughout the organization.

Quality
Our designs, graphics and plans are subject to rigorous quality standards and review which results in clear, effective documents.

Innovation
Sebago Technics' design professionals employ the latest engineering and technological methods to develop practical, cost-effective solutions.

Results
Sebago Technics' resources and experience combined with our project team approach provide the capacity to meet client needs and deliver results.

Founded in 1981, Sebago Technics, Inc. is a consulting firm of more than fifty design professionals and technical staff providing services throughout New England. From the start, our business plan was simple:"to provide quality, cost-effective civil engineering services that are responsive to a customer's goals, schedule and budget." Our One Company capabilities and resources provide clients with experience and solutions to respond to their planning, permitting and design needs. Guided by integrity, experience and teamwork we understand that we can only succeed when quality, responsive and cost-effective service is provided to our customers.

At a Glance:

Year Established: 1981
(Employee Owned Since 1998)

Licensed & Certified Professionals

Professional Engineers
Certified Flood Plain Manager
Certified Wetland Scientist
DOT Project Administrators
LEED Accredited Professionals
Professional Land Surveyors
Registered Landscape Architects
Licensed Soil Scientist
Subsurface Disposal Systems Designers
Erosion Control, Sedimentation & Stormwater Inspectors
Professional Traffic Operations Engineer

Approach & Services





We provide engineering, planning, surveying and environmental services to companies, developers, land owners and the public sector for customers and projects, both large and small. Our experience includes projects in commercial, industrial, retail, residential, recreation, utility and government sectors. We meet our client needs through an efficient and effective delivery system providing clients a single point of contact. Our approach combined with our expertise and services allows us to meet the needs of our customers within One Company.

Nearly every project requires some level of regulatory permitting and public process. Sebago Technics excels in these areas. The nature of our work enables us to remain current on the latest regulations and forge important relationships with regulatory and enforcement personnel in governments and agencies throughout the region. Our project managers and technicians are experienced with the requirements and processes of various federal, regional, state and municipal authorities. We work diligently and proactively in pursuit of permits and approvals striving to balance compliance with our clients' needs and interests.

Clients rely on Sebago Technics to guide their projects through design, permitting and construction processes utilizing either traditional or design-build delivery. Our licensed professionals remain current in the latest engineering practices and are certified in LEED, Erosion, Sedimentation and Stormwater Control & Inspection, Wetlands, Soils, Septic Design, and Traffic Operations. Our One Company range of services and expertise allows us to assist projects from concept through construction.

As a 100% employee owned company our employees set us apart through commitment and integrity. Our team-based approach to services provides each client with the expertise and input of multiple disciplines. Whether an engineer, surveyor, landscape architect or environmental scientist each project benefits from the perspective and skills of varied professionals. The combined experience and knowledge, under one roof, benefits each project and customer for a better result.

General Services

Land Surveying
Site and Civil Engineering
Transportation/Traffic Engineering
Landscape Architecture
Environmental Engineering
Natural Resources and Soils Science
Permitting (Local/State/Federal)
Construction Services
GIS & Mapping

Civil & Site Engineering





Civil Engineering is a broad based profession that deals with the design, construction and maintenance of the physical and naturally built environment. Civil and Site Engineering projects may include regulatory permitting at all levels of government, technical studies and evaluations, planning and implementation, feasibility assessments, stormwater modeling, infrastructure design, site and subdivision planning/design. Often, the Civil Engineer will take the lead on a project coordinating other disciplines such as environmental, geotechnical, survey and transportation components that comprise a complete project approach.

From the beginning, Sebago Technics, Inc. has focused on offering a broad range of Civil Engineering services to the public and private sector. Our diverse Civil Engineering staff provides customers the experience and expertise to evaluate, design and permit projects covering a broad spectrum. As technology advances and regulatory processes evolve, our Civil Engineering staff has remained flexible and adaptive with a focus on customer service. Our Civil Engineers work together in teams of experienced professionals to assist customers on a variety of projects. Our staff works with customers from inception to completion to plan, design, permit and construct projects. Throughout a project, we strive to be attentive to the customer's goals and seek solutions that are cost-effective and responsive to regulatory requirements.

Fort Meade
Department of Defense, MD

Masterplanning for the 500-Acre, Ft. Meade housing development including civil design for Phase I consisting of 1,000 new homes, 330 acres, and 9 miles of roadway and supporting infrastructure.

Eastern Manufacturing Facility
Brewer, ME

Civil Engineering, permitting and transportation planning for a $19 million site redevelopment for fabricated assembled modular industrial structures for shipment via rail, barge and highway throughout the United States.

Government & Municipal
General Engineering Services

Sebago Technics has a long history of ID/IQ delivery of services to municipalities and government agencies.

U.S.P.S. Distribution Center Expansion
North Reading, MA

Civil Engineering, Regulatory permitting and Traffic Impact Assessment for 140,000 s.f. (design-build) expansion of an existing postal facility.

Exit 3, I-295
South Portland, ME

$6.5 million redesign of existing interchange to expand capacity and eliminate 3 High Crash Locations.

Municipal Streets
Portland, ME

Redesign of 16 arterial and collector streets, including storm sewer separation, totaling more than 4 miles in length as part of the City's CSO program.

Land Surveying







Survey is a fundamental component required by almost every project. We believe maintaining a qualified in-house staff of survey professionals and technicians provides enhanced project coordination and responsive customer service. With one of the largest survey staffs in Maine, we are able to respond promptly to client and project needs. We can produce multiple survey crews on any given day with state of the art technical equipment including, high definition laser scanner, GPS systems, robotic instruments, total stations and technical support. Sebago maintains our own GPS base station allowing us to complete real time kinematic GPS within a supporting network. Data collected in the field is processed electronically by survey technicians and professional land surveyors to produce quality final products whether it is a stand alone survey plan or engineering data to be used in design and construction.

Cutler Naval Communications Facility
Cutler, ME

Boundary and Existing Conditions Survey using aerial mapping for Naval Facility along the coast of Maine.

Brunswick Naval Air Station
Brunswick, ME

Boundary Survey of Base perimeter and supporting Existing Conditions survey for Base projects.

Remote Terminal Survey
Statewide, ME

Boundary survey, existing conditions surveys and topographic surveys on hundreds of Remote Terminal sites. Site design, civil engineering and landscape design were a few of the services performed on the sites. In addition, we performed the site selection, property owner negotiation and represented the utility company before municipal/state agencies.

Maine Medical Center
Multiple Locations, ME

Boundary, Existing Conditions, Construction Layout and As-Built Surveys for multiple campus and single facility locations throughout Maine. Including a recently completed As-built survey of the entire Bramhall Campus consisting of several city blocks within Portland, Maine.

GPS Mapping – Maine Superfund Sites
Statewide, ME

Created maps of all locations identified on the Maine Department of Environmental Protection's Uncontrolled Site Program List. A 2,500 foot radius was mapped to identify all properties within 2,500 feet of the published Superfund Sites for all easements or transfer or real property.

Landscape Architecture







Landscape Architecture was integrated into Sebago Technics' practice in 1988, bringing a creative design focus to the company and complimenting its civil engineering capability. Landscape architects lead the design effort on all projects, working closely with our natural resource scientists and engineers. We listen closely to the needs of our clients, their goals for each project, and strive to accomplish their objectives, accounting for the environmental and regulatory constraints affecting each project.

Having practiced throughout the United States and overseas, observing regional and international design vocabulary, we bring diverse knowledge to each project. Our landscape architects focus on innovative design practices yet remain grounded by a strong technical knowledge that produces cost effective, constructible solutions. A high standard of quality is our trademark.

As LEED Accredited Professionals we are committed to the principles of sustainable design practices. Embracing technology, we believe people understand design in a visual context and continue to reflect our designs with quality graphic communication.

LL Bean Flagship Campus
Freeport, ME

Masterplanning, site design and landscape architecture for three building expansions at the Freeport Campus, including LEED certification and branding of the LL Bean image using native materials and site detailing.

Waterfront City Park
Gardiner, ME

Transformation of a former industrial waterfront into an expansive green, riverfront boardwalk, visitor center and natural amphitheatre along the Kennebec River, including park access gateways and connectivity to adjacent historic downtown area.

Portsmouth Public Library
Portsmouth, NH

Site design and landscape architecture for civic library building and site within Portsmouth's historic waterfront district; this project features extensive brick and granite site paving, native plant materials and was awarded LEED Silver accreditation.

Maine Medical Center
Portland, ME

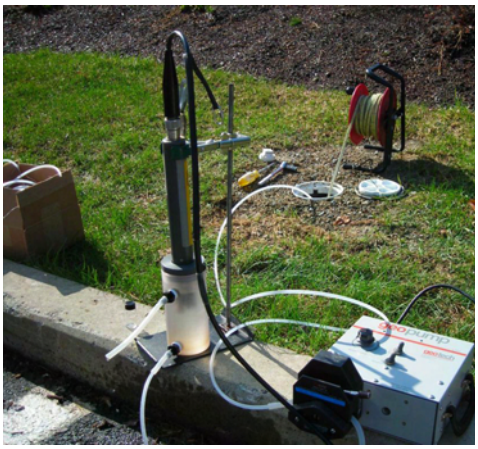
Masterplanning, site design and landscape architecture for a state of the art birthing center expansion, eight level parking garage, central utility plant, Lifeflight helipad and associated site improvements.

PD Merrill Marine Gateway
Portland, ME

Situated at the eastern terminus of the Veteran's Memorial Bridge, this public park will feature two major pieces of sculpture, and is designed within the context of the marine heritage of Portland's working waterfront.

Environmental Services





At Sebago Technics; our Environmental Engineers and Technical Staff provide its customers with planning, assessments, designing, project management and permit acquisition for a variety of projects. Our experienced team assists with the design of municipal and private water, wastewater, and stormwater conveyance systems. Sebago Technics has completed miles of sewer separation projects, designed sanitary pump stations and solid waste facilities. We also support both businesses and land owners in the completion of Environmental Site Assessments (ESA's) and remediation prior to land transfers or project development.

Sebago Technics offers Phase I & II site assessment services to characterize and quantify site contamination for future site remediation. Sebago Technics has successfully guided numerous properties through the Maine Department of Environmental Protection's Voluntary Response Action Program (VRAP). This process includes timely and cost effective Phase I & II assessments which are typically completed in conjunction with property redevelopment.

With a well respected Environmental Staff, we are known in the industry for high intensity soil surveys, wetland delineations and vernal pool surveys for development prospects. Our licensed Site Evaluators and Engineers work together to design our client's subsurface wastewater disposal systems; and are able to do so for both small and large engineered systems which include local and state permits.

Maine Coast Heritage Trust
Natural Resource Inventories
Islands and Coastal Properties
North Haven to Mount Desert Island

Natural resource field mapping of a variety of natural resources, particularly vegetation habitat communities, on 11 different preserves owned by Maine Coast Heritage Trust, and publishing the data in ArcGIS

City of Portland, ME

Hydrology and FEMA flood plain analysis, mapping and permitting.

Turner Farm Restoration
North Haven, ME

Inventory of natural resources on 260 acres of land. Delineation, classification, and GPS location of the wetlands was performed. Class 'B' High Intensity Soil Survey was prepared to classify all soils on the property. A wetlands map, a soils map, and natural resources report were final deliverables.

Freeport Village Station
Freeport, ME

Sebago Technics conducted Phase II remediation in conjunction with the site's application to the Maine Department of Environmental Protection (MDEP) Voluntary Response Action Program (VRAP). Working closely with the developer and the MDEP, coordinated the most cost-effective and permanent solutions to remediate the site in concert with the construction schedule.

Site Planning







We approach planning much as we do all opportunities; with pragmatism and creativity. Combining site specific information (such as topography, natural resources, and existing development on site), with regulatory criteria, and local ordinance requirements we work to create conceptual and long term master plans that move our client's vision to reality.

Every great land development project needs a solid plan as the foundation. Without this crucial piece of design, sites never realize their true potential and become victim to an ad-hoc style of development, wedging uses together, creating poor internal site circulation and wasted space within the development as well as reduced income potential for land owners.

During the planning process we meet with local, state and federal regulators to ensure the design not only fits the site and the restrictions but to identify potential red flags from a permitting perspective early in the planning process. This is extremely important to both budget and timeline. Understanding the regulatory obstacles at the outset allows for simplified navigation throughout the permitting and development process.

Unum Provident Headquarters
Portland, ME

Masterplanning and landscape architecture for Unum Provident Home Office III, the largest office building in Maine, together with a three level parking structure with 1200 parking spaces and employee amenities including walking pathways constructed with porous paving materials.

LL Bean Order Fulfillment Center
Freeport, ME

Site planning and permitting for 1.2 million square feet of warehousing and distribution space, employee parking and site amenities on a 72 acre campus in Freeport. This facility processes and ships every order from LL Bean to customers worldwide.

Central Maine Medical Center
Lewiston, ME

Site design to accommodate a major expansion and new emergency department at Central Maine Medical Center, including arrival and visitor drop off areas, ambulance service arrival bays, visitor parking and related site features.

Edward T. Gignoux Federal Courthouse
Portland, ME

Streetscape and site planning for the $20 million renovation of this federal facility, located in Portland's civic district. Site materials selected reflect the institutional nature of the courthouse, instilling a character of authority and permanence.

SEBAGO TECHNICS

Site Evaluation & Regulatory Permitting





The site alternatives and selection process is often an evolutionary one that begins with defining the project needs and objectives. Over the past 25 plus years Sebago Technics, Inc. has participated in site selection process and permitting for projects ranging in size and complexity. While there are commonalities in the process, no two projects are exactly the same. As a result, we apply our knowledge and depth of experience to develop specific solutions to each and every project.

We have gained a tremendous amount of experience over the years with permitting projects in many regulatory environments. In the development of a design we strive to anticipate the regulatory issues and address them in the design process so that they do not become obstacles later in the process. When considering alternative sites or alternative site designs we are able to quickly summarize the permitting considerations as well as the cost and performance considerations.

When it comes to permitting we have had a great deal of experience with the Maine Department of Environmental Protection (MDEP) and the Army Corps of Engineers (ACOE). We have developed working relationships with the project analysts at the MDEP and the ACOE and as a result have been able to get projects through the permitting process with successful outcomes for our clients.

Maine Crossing
South Portland, ME

Site evaluations and investigation to develop a 13 acre wetland mitigation area responsive to project impacts including permitting through the Maine DEP, USACE and EPA.

Cliff Island and Cushing Barge Landings
City of Portland, ME

Sebago Technics, Inc. assisted the City of Portland with natural resource assessments and permitting for two municipal barge landings. Multiple regulatory permits and coordination were required to include the Harbor Commission, Submerged Lands lease, Maine DEP, USACE, Department of Marine Resources, Inland Fisheries and Wildlife, City of Portland Flood Plain and Shoreland Zoning permits.

International Jetport (GA) Facility
Portland, ME

Planning and Design of a 7 acre General Aviation Facility required preparation of comprehensive permit application for the Maine DEP Site Location of Development Act, Federal Aviation Administration (FAA) and City of South Portland for a new major development project.

Eastern Fine Paper Redevelopment
Brewer, ME

Engineering and permitting for redevelopment of a 39 acre manufacturing site. Permitting was extensive and fast-tracked to include City of Brewer approvals, Maine DEP Site Location of Development Act and Natural Resources Protection Act permits, Submerged Lands lease USACOE permitting, Maine Department of Transportation coordination, Beneficial Use permit for dredging and coordination with multiple agencies (Historic Preservation Office, Dept. of Marine Resources, Inland Fisheries & Wildlife).

Design/Build Project Delivery







The Design-Build process offers a coordinated team approach to the planning, design and construction of a Project. Sebago Technics, Inc. has successfully participated on a wide variety of Design-Build projects. Our success is a function of an open working relationship committed to customer service, innovation balanced by practicality and the timely delivery of services.

Sebago Technics, Inc. has participated in a wide range of design-build projects throughout Maine and New England. We have partnered with national and local teams for transportation and site development projects focused on government and private/public projects. At the federal level we have successfully completed large scale military housing, infrastructure and facility support projects along with postal services expansions and new facilities. Our broad design-build experience also includes unique private-public partnerships including wind generation and site redevelopment projects. Sebago Technics, Inc. successfully participated in Maine's first large scale Island wind generation project on Vinal Haven Island. We also participated in a fast-tracked private-public partnership of a Brownfield's site in Brewer, Maine. The project included substantial permitting and agency coordination to accommodate a new modular construction facility. Our experienced team of professionals understands the design-build process, importance of strong partnerships and the delivery of quality services focused on the customer.

72 Unit Family Housing, Phase I
Brunswick Naval Air Station, Brunswick, ME

Bachelor Enlisted Quarters (BEQs)
Brunswick Naval Air Station, Brunswick, ME

Brunswick Gardens Sewer Realignment
Brunswick Naval Air Station, Brunswick, ME

50-Unit Navy Lodge, Naval Station
Newport, RI

Naval Exchange Addition, Naval Station
Newport, RI

Naval Submarine Base
New London, Groton, CT

126 Unit Family Housing, Phase II
Brunswick Naval Air Station, Brunswick, ME

U.S.P.S. Flat Sequencing System Expansion
North Reading, MA

U.S. Postal Service Distribution Center
Scarborough, ME

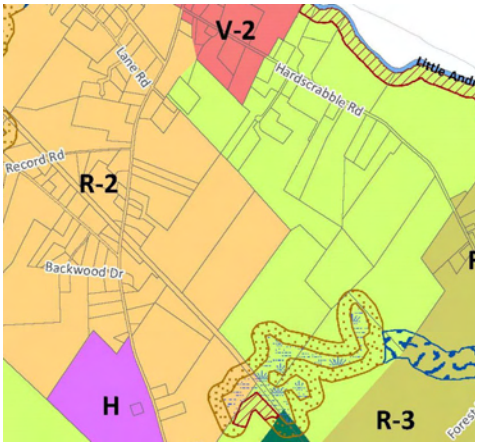
Picerne Military Housing, Fort Meade
Fort Meade, MD

Killock Pond Road
Hollis, ME

Fox Island Wind Power Project
Vinal Haven, ME
(Partnership with Cianbro Corporation)

GIS and Mapping Services
Municipal







GIS is a set of technologies and software tools that enable maps to be made from geospatial data as well as other data sets, such as tabular information in tables and databases. The data is visualized in the form of a map or other graphical expression of location.

The days of approximate GIS mapping is giving way in many quarters to more accurate and formally constructed maps which can be available for use at various scales, through multiple software platforms, and can be utilized on multiple devices. Additionally, the data is coordinated and registered to one another and other critical data layers to create tightly integrated municipal mapping collections. For instance, zoning and shoreland zoning map layers can be created that will accurately agree with parcel data and orthoimagery collected over many years as part of larger state/regional orthoimagery projects. The data can be available locally for town staff use as well as in hosted, public facing web mapping applications for the staff and public to access. Data which is more reliable and accurate can also be more economical in the long run as it is used to support municipal staff decision making. Activities in planning, code enforcement, assessment, public works, and economic development all can benefit from more reliable and accurate data that agrees well.

Our team can work with all of today's mapping technologies to deliver superior spatial services to public and private clients. Through the use of today's spatial data sources like real time GPS (sub-meter and survey-grade), photogrammetry, orthoimagery, LIDAR, remote sensing, web mapping services (WMS), and mobile mapping we have been able to build and maintain geospatial datasets for local and state government throughout Maine and New England. Our staff is also involved with many state/regional projects such as orthoimagery acquisition and can help town staff navigate through what may be of benefit locally to town specific matters.

Raymond GIS Services
Raymond, ME

Annual maintenance of core GIS data such as tax maps, zoning map, shoreland zoning map, pavement management CIP maps, and various other on call GIS related projects in support of Town staff. Additionally we have assisted in the resolution of town boundary related mapping issues.

Poland Zoning Map Maintenance
Poland, ME

Restructuring an existing municipal zoning map to incorporate a higher degree of spatial accuracy along the water's edge for shoreland zoning and modifying the spatial dataset to represent both overlay zones as well as general zone classes.

South Portland Storm Sewer Inventory Project
South Portland, ME

Capture of centimeter level (survey-grade) GPS elevations for a large municipal storm sewer system and the verification of pipe connections from structure to structure. The data was delivered to the client in an edited version of their own geodatabase to update storm sewer mapping and serve as the basis for a storm water modeling exercise.

Hart Brook Sanitary & Storm Sewer Mapping
Lewiston, ME

Capture of centimeter level (survey-grade) GPS elevations for an impaired municipal watershed and the verification of pipe connections from structure to structure. The data was delivered to the client in a geodatabase designed relate to their existing wastewater geodatabase and serve as the basis for updates to their existing mapping in-house.

Kittery Shorezone Mapping Project
Kittery, ME

Used LIDAR collected at low tide to map the intertidal zone for all of Kittery's coastline to assist town staff in shoreland zoning issues and parcel mapping efforts being conduct in-house. Also created multiple high water lines to assist with changing shoreland zoning needs due to annual tidal variations.

Civil Engineering
Site Plans
Grading & Drainage Design
Utility Design (Water, Sewer)
Stormwater Management
Permitting (Local, State & Federal)
Quarry/Gravel Pit Studies & Permitting
Technical Review
Construction Inspection

Environmental Engineering
NRPA/NEPA Studies
Site Assessments (ESAs, VRAPs)
Septic Design & Analysis
Floodplain Studies & Permitting

Transportation Engineering
Signal Analysis, Design & Management
Traffic Analysis & Permitting
Intersection, Road & Highway Design
Alternatives Analysis & Route Design

Landscape Architecture
Conceptual & Site Design
Park & Public Space Design
Urban Design
Master and Campus Planning
Waterfront Planning
Planting Design

Land Surveying
Boundary & Topographic Survey
High Definition 3D Laser Scanning
Subdivisions
GPS Survey & Mapping
Construction Layout
As-Built Survey
Deed Research
GIS Mapping

Soil Sciences
Soil Surveys & Testing
Wetland Assessment & Permitting
Turf Impact Testing
Vernal Pool Mapping

SEBAGO TECHNICS

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SEBAGO TECHNICS

Our People



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Vice President,
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Vice President,
Landscape Architecture



Steven Sawyer, PE
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Transportation



Chris Branch, P.E.
Regional Manager,
Lewiston



Patrick Somma
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Keith McAlary
Controller



Steve Doe, RLA, LEED-AP
Senior Project Manager



Daniel L. Riley, PE
Senior Project Manager



Shawn M. Frank, PE
Senior Project Manager



Grant Austin
Environmental Practice
Leader



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Senior Landscape
Architect



Gary Fullerton,
Director,
Natural Resources



Charles L. Brown, PLS
Vice President, Field
Services

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

GENERAL SERVICES

Civil Engineering

- Infrastructure and Site Development
- Regulatory Permitting
- Roadway Engineering and Design
- Development Planning & Feasibility Studies
- Airport Engineering

Environmental Engineering

- Regulatory Permitting (Local, State & Federal)
- Site Assessments (ESA Phase I, II & III)
- Wastewater & Groundwater Treatment
- Underground Storage Tank Services
- Effluent & Groundwater Modeling/Monitoring
- Wastewater Minimization Studies
- Landfill Closure Plans
- Water Supply & Treatment System Design

Transportation Engineering

- Corridor Studies
- Traffic Impact/Access Mgmt Analysis
- Traffic Modeling and Simulations
- TSM Evaluations and Design
- TDM Evaluations
- Context Sensitive Highway/Urban Street Design
- Pedestrian & Bike Trail Design
- Traffic Signal System Planning
- Traffic Signal Design & Operations
- Intermodal Facility Planning & Design
- Construction Administration

Land Surveying

- Technical Deed Research
- Boundary Survey/Topographic Survey
- Land Title Surveys
- Hydrographic Surveys
- Mortgage Inspections
- Construction Layout
- As-Built Record Documentation
- Control of Aerial Photography
- Land Data Acquisition/Land Information Systems

Landscape Architecture

- Site Selection Studies
- Conceptual & Site Design
- Skate Park Design
- Recreation Facility Design
- Sidewalk & Streetscape Design
- Planting Design
- Irrigation System Design
- Construction Observation & Administration

Natural Resources

- Medium & High Intensity Soil Surveys
- On-Site Wastewater Disposal Systems Design
- HHE-200 Preparation
- Sediment & Erosion Control Plans
- Nutrient Loading & Mitigation Analysis
- Soil Testing
- Wetlands Delineation/Vernal Pools

Land Planning

- Zoning Analysis/Ordinance Writing
- Demographic Analysis
- Comprehensive Planning
- Contract Zoning
- Grant Writing
- Planning Board Representation

Artificial Turf Impact Testing

- Municipal Fields
- College Facilities
- Professional Athletic Facilities

















100% Employee Owned
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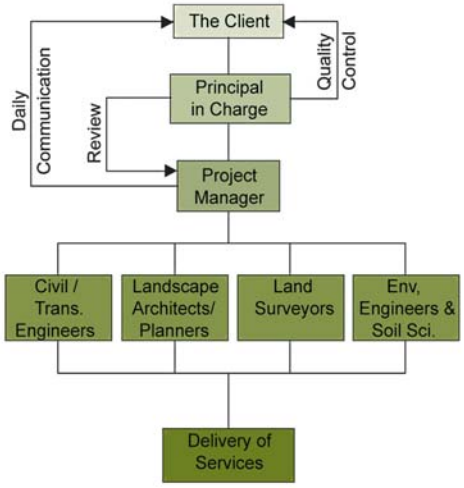
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SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Project Organization

Our diversified professional experience provides each client with the specialized knowledge and abilities required for each project. In accordance with our corporate philosophy, the firm offers integrated professional services in the fields of civil, environmental and transportation engineering, soil science, land surveying, planning and landscape architecture.



Project teams are selected based on our understanding of client objectives, the special technical requirements of the project, and the management skills necessary to coordinate the comprehensive review and approval process. Specific team members are selected for their individual abilities and demonstrated performance on similar projects.

While the firm emphasizes its ability to provide coordinated multi-disciplinary services, each section within the firm practices independently for those clients who may require only certain aspects of our professional service. In some cases, our services may be limited at the outset of a project and more comprehensive as the project progresses. In either case, our multi-disciplinary strength provides a check and balance to each discipline performing services as an independent section of the firm.

A senior member of the firm is assigned responsibility for each client, and fills the position of Principal-in-Charge. A Project Manager is assigned to each project to maintain client communication, and coordinate the diverse technical and administrative aspects of the project. The Project Manager is available daily to meet client needs. With the Principal-in-Charge, the Project Manager selects and assigns technical staff as required by the nature and schedule of the project.

The chart illustrates our corporate structure and details our approach to project organization and management. The professional staff is supported by qualified technicians with the latest in computer technology. Technical software includes AutoCAD, Land Development Desktop and HydroCAD. The ACCI accounting package maintains up to date project costs and detailed reports of time charges and expenses by specific task.

Section 10. Construction Management Plan

Construction Management Plan

The project will be managed throughout construction by Colson & Colson General Contractors, Inc. of Salem, OR. They will relocate one of their full time project manager who will reside in the Portland area during the entire construction period. This project manager will oversee all trades and will be responsible for SWPPP management, interface with neighboring residents, coordinate permitting and inspections with the City and ensure that site access is maintained during construction.

Section 11. Statement of Traffic Generation

Statement of Traffic Generation

The proposed project will have a single access point off from Ocean Avenue. The nature of the project is that it is a low traffic generator both in overall trips and peak hours. In addition, the project will provide transportation services for its residences for shopping, doctor appointments, volunteer activities and other trips from the facility. Furthermore, the peak hour trips do not typically coincide with the peak hour traffic of the abutting roadways as these constitute the times of meals and social activities of the residence.

Depending on how the project is classified, the traffic generation is as follows:

PROPOSED 150 SUITE ASSISTED LIVING LAND USE 254							
BY NUMBER OF BEDS	**BEDS**	**RATE (Trips/Bed)**	**TOTAL**	**ENTER (%)**	**EXIT (%)**	**ENTER#**	**EXIT#**
Weekday	165	2.66	438.9	50.00%	50.00%	219.5	219.5
Weekday Morning Peak Hour of Roadway	165	0.14	23.1	65.00%	35.00%	15.0	8.1
Weekday Afternoon Peak Hour of Roadway	165	0.22	36.3	44.00%	56.00%	16.0	20.3
Saturday	165	2.20	363.0	50.00%	50.00%	181.5	181.5
Saturday Peak Hour	165	0.33	54.5	46.00%	54.00%	25.0	29.4
Reference - ITE Trip Generation Manual, 7th Edition.							

PROPOSED 150 SUITE CONGREGATE CARE FACILITY LAND USE 253							
BY NUMBER OF DWELLING UNITS	**UNITS**	**RATE (Trips/Bed)**	**TOTAL**	**ENTER (%)**	**EXIT (%)**	**ENTER#**	**EXIT#**
Weekday	150	2.02	303.0	50.00%	50.00%	151.5	151.5
Weekday Morning Peak Hour of Roadway	150	0.06	9.0	59.00%	41.00%	5.3	3.7
Weekday Afternoon Peak Hour of Roadway	150	0.02	2.6	55.00%	45.00%	1.4	1.1
Saturday	150	NA	NA	NA	NA	NA	NA
Saturday Peak Hour	150	NA	NA	NA	NA	NA	NA
Reference - ITE Trip Generation Manual, 7th Edition.							

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

Per the coordination with the Maine Departments of Conservation and inland Fisheries and Wildlife, no specific habitat and natural features were noted.

The entire property consists of approximately 18.33 acres. Of this area, approximately 8.16 acres will remain as zoned, R-OS, and consists of wetland and forested uplands. This land is being preserved by the applicant for public for use of the existing trails that the transverse the parcel. These trails include trials through the Central Maine Power transmission main easement that connect to trails to the north in the Quarry Run Dog Park.

The proposed project will be developed on the remaining 10.17 acres which is within the R-5A Zoning District. The project will "develop" approximately 4.93 acres, impervious and non-forested re-vegetated area, with the remaining 5.46 acres being maintained in a natural state. Within this undeveloped area, the applicant has executed an easement document with Portland Trails that will allow public access from Ocean Avenue to the trails within the R-OS portion of the property.

Along the boundary of the R-5A and R-OS zones and adjacent to the existing and proposed new access trail is a ridge which contains the highest point of Portland along the coast; it is marked by a National Geodetic Survey Marker, designation of West Graves, and is situate at approximately elevation 170 NAVD.

Section 13. Stormwater Management Plan

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT PLAN

For

Portland Retirement Residence
Portland, Maine

Prepared for

Hawthorn Development Group, LLC
9310 NE Vancouver Mall Drive, Suite 200
Vancouver, WA 98662

September 2015

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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

14432

STORMWATER MANAGEMENT PLAN

Portland Retirement Residence
802-828 Ocean Avenue
Portland, Maine

Executive Summary

Hawthorne Development Group, LLC is submitted plans to develop within a 10.17 acre portion of 18.32 acres of undeveloped land off Ocean Avenue into a 150-unit retirement residence. The property is shown as Lot A-7 on City of Portland Tax Map 411 and Lots A-6, A-7, and A-21 on City of Portland Tax Map 416.

The development will create approximately 2.86 acres of new non-vegetated surface and 4.93 acres of new developed area as defined by the Maine Department of Environmental Protection (MDEP).

A majority of the site, roughly 90%, is tributary to Casco Bay via unnamed drainage ways. The remaining 10% of the site, located in the southwest portion of the site adjacent to Wildwood Circle appears to be tributary to Fallbrook. 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 90.1% of the new non-vegetated area and 85.4% 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 an underdrained subsurface sand filter located within the development parking field and 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.

As the project results in an overall reduction in tributary area draining to Fallbrook and has no development within the Fallbrook watershed, the Urban Impaired Stream Standard does not need to be addressed.

14432

STORMWATER MANAGEMENT PLAN

Portland Retirement Residence
802-828 Ocean Avenue
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 undeveloped land with woods land cover comprising of 18.32 acres in Portland.

Land Cover: The site is undeveloped land consisting of wooded land cover. The development site abuts Ocean Ridge to the north, Ocean Avenue and single family residential structures to the east, undeveloped land to the south, and Pheasant Hill Drive development to the west.

Site Topography: The majority of the site (75%) drains in a southeasterly direction towards the existing pipe outlets in Ocean Avenue, with the drainage break located just east of the existing Central Maine Power easement at the rear of the site. The remainder of site drains in a westerly direction away from the proposed development.

Slopes on site range from 5 to 10% in the central portion of the site, within and adjacent to wetland areas, to steeper 15 to 25% slopes along Ocean Avenue and the rear of the site.

Surface Water Features: The majority of the site drains to an existing closed drainage system within Ocean Avenue and a cross culvert across Ocean Avenue. These culverts outlet to an existing drainage way along the northerly side of Eben Hill Road (Ocean's East), continuing to travel in a northeasterly direction, crossing Briarwood, Ocean Woods, Presumpscot Street, on its way to 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
Hollis fine sandy loam	HrB/HrC	D	0.32
Hollis very rock fine sandy loam	HsB/HsE	C	0.32
Scantic Silt Loam	Sn	D	0.49

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 0007C, dated December 8, 1998).

III. Proposed Development

The Applicant is proposing to a 150 unit retirement residence, consisting of 135 single units and 15 duplex units.

Alterations to Land Cover: Completion of the proposed project will result in the creation of 2.86 acres of non-vegetated area and 4.93 acres of developed area.

IV. Downstream Ponds and Waterbodies

The majority project site is tributary to Casco Bay, which is not listed by the Maine Department of Environmental Protection as impaired or threatened. A small portion of the site, located within the southwest portion of the site, is tributary to Fall Brook which is listed by Maine DEP as an Urban Impaired Stream within Chapter 502.

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 13 and in the Inspection, Maintenance, and Housekeeping Plan attached in Attachment 3. 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 an underdrained subsurface sand filter located within the development parking field and a grassed underdrained soil filter located adjacent to the access roadway. The BMP locations are indicated on the attached plans.

A. Underdrained Subsurface Sand Filter

An underdrained subsurface sand filter must detail 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 Storm-Tech Isolator Row sized based on the runoff from ta 1-year, 24 hour storm event. 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 1: *Stormwater Quality Calculations*.

B. Grassed Underdrained Soil Filter

A grassed underdrained soil filter must detail 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 1: *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, and 25-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, and 25-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

*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 confluence of two outlet pipes which discharge on the east side of Ocean Avenue and just north of Eden Hill Road. Runoff from this study point continues through un-named drainage ways, before crossing Presumpscot Street and I-295, before entering Casco Bay.

SP2 is a representative study point located in the southwest quadrant of the development site, adjacent to the existing utility corridor. This study point is where runoff leaves the site and drains to an adjacent lot, before entering Fallbrook.

C. Pre-Development

SP1: SP1 has a total of twelve (12) drainage areas tributary to it, which includes four (4) drainage areas located on the development site and the remaining being offsite drainage areas, such as the east side of Ocean Avenue, Ocean Ridge development, and residential house lots along Ocean Avenue.

SP2: SP2 has a single drainage area (Subarea 4) tributary to it; this study point is located at the property line where drainage crosses the property line in the southwest portion of the site, adjacent to Wildwood Circle.

Subareas 1, 101, 301, 302, and 303 represent the portions of Ocean Ridge condominium development that is tributary to SP1. These areas remain unchanged from pre-development to post-development condition.

Subareas 100 and 300 represent the east side of Ocean Avenue which enter the closed drainage system within Ocean Avenue prior to discharging to SP1. These areas remain unchanged from pre-development to post-development.

Subarea 3 and Subarea 6 are several house lots along the west side of Ocean Avenue, with the development site located at the rear of these house lots. Subarea 3 enters the closed drainage system within Ocean Avenue. Subarea 6 enters two driveway culverts before reaching the 24" Ocean Avenue cross culvert. Both areas discharge to SP1 and remain unchanged from pre-development to post-development.

Subarea 1 is approximately 3.2 acres in area located at the northeast corner of the development site along Ocean Avenue. This area also includes a portion of Ocean Avenue, a portion of two house lots along Ocean Avenue, and a small portion of the abutting Ocean Ridge development site where runoff from developed portions of the site flows through a stormwater buffer easement prior to entering the subject site. Runoff continues along Ocean Avenue gutter/shoulder before entering the closed drainage system at a catch basin located on the west side of Ocean Avenue, roughly opposite Ashley Lane (Ocean Woods development).

Subarea 2 represents a majority of the site to be developed; it's roughly 11.5 acres in size which includes portions of Ocean Ridge, Ocean Avenue, and two resident house lots. Roughly 10.6 acres of the total area is the development site, which is 60% of the total site area. Runoff from Subarea 2 drains to an existing 15-inch driveway culvert prior to reaching and ultimately flowing across Ocean Avenue at the 24-inch cross culvert.

Subarea 4 is roughly 1.2 acres in area located at the southwest portion of the lot where runoff exits the site at the utility corridor adjunct to Wildwood Circle and is ultimately tributary to Fallbrook.

Subarea 5 represents the southeast portion of the site, a single house lot and a portion of Ocean Avenue. Subarea 5 is roughly 1.8 acres in size and drains to the existing Ocean Avenue cross culvert.

D. Post-Development

Pre-development subarea 1 has been divided into four subareas (11, 12, 15A and 15) in the post-development condition. Subareas 11 and 12 have limited

development within the drainage boundaries and respectively represent the south side and north sides of the proposed access. Subarea 15A represents a portion of the access road which will not receive any treatment and will discharge to the wooded area south of the access road. Subarea 15 represents the lower portion of the access which is tributary to the closed drainage system along the site frontage. The total area of these catchments is 4.84 acres, which is greater than the pre-development area of Subarea 1 in the predevelopment, 3.16 acres. The increase in area is a result of the site grading and drainage ditch along the access road.

Pre-development subarea 2 has been divided into 4 subareas in the post-development condition, subarea 20, 21, 22, and 23. Subarea 20 represents the upper and lower portion of the site which will remain undeveloped. A 3-sided box culvert is proposed along the access road so as not to alter the drainage characteristics of existing drainage way which traverses the site. Subarea 21 is the majority of the development footprint and impervious surface which will be collected in the storm drain collection system and outlet to the proposed subsurface sand filter. Subarea 22 represents the upper parking lot and associated access way which will be collected and treated by the grassed underdrain soil filter. Subarea 23 represents the grassed underdrain soil filter.

Subarea 4 in pre-development has been reduced in area by approximately 0.10 acres and is now represented by subarea 40 in the post-development model.

Subarea 50 (subarea 5 in pre-development) has been reduced in area by 0.6 acres but has a minor increase in overall curve number (80 pre vs 82 post).

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)					
					2-year		10-year		25-year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
SP1	23.01	23.10	16.15%	28.68%	17.1	15.9	31.5	31.1	44.2	44.6
SP2	1.21	1.12	0%	0%	1.4	1.3	2.9	2.7	4.1	3.9

As depicted in the above table, post-development peak runoff rates at the two study points will be below pre-development levels for the 2-year and 10 year storm event. The peak runoff rate for the 25-year storm event, at Study Point 1, is anticipated to be 0.40 cfs greater than the pre-development rate, which is a 1% increase. The downstream receiving channel, based on visual filed observations, is adequately sized to accommodate the pre-development peak-runoff rate as well as the anticipated 0.4 cfs increase without overtopping existing channel embankments.

VIII. Water Quality Analysis

To achieve the required water quality treatment, an Underdrained Subsurface Sand Filter is proposed to treat the majority of the development with a grassed underdrained soil filter providing treatment of for the upper parking lot and associated access way. Each treatment measure has been designed and sized in accordance with the current Maine DEP Stormwater Best Management Practices handbook.

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 90.1% and a developed area treatment percentage of 85.4%, which exceeds the required treatment levels of 90% and 75%, 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.

IX. Urban Impaired Stream Standard

As mentioned in Section VII.C of this report, Subarea 4 is tributary to Fallbrook which is listed in Chapter 502 as an Urban Impaired Stream, which requires 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. As a result of the proposed development and project grading, the total drainage area tributary to Fallbrook is reduced by 8% from 1.21 acres to 1.12 acres. No developed area is anticipated within Subarea 4, so no mitigation or compensation fee is proposed.

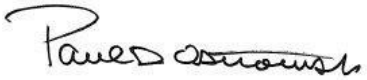
X. Conclusions

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 90.1% of the created impervious surface and 85.4% 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 0.4 cfs at Study Point 1 during the 25-year storm event is expected, but will not cause an unreasonable adverse effect on downstream development. 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.





Paul D. Ostrowski, P.E.
Project Engineer

Robert A. McSorley, P.E.
Senior Project Manager

PDO/RAM:pdo/jf
September 9, 2015

Date: 9/17/15

Attachment A

Stormwater Quality Calculations

MDEP GENERAL STANDARD CALCULATIONS
PORTLAND RETIREMENT RESIDENCE
JOB #14432

SUBAREA #	SUBAREA TOTAL AREA	NEW ONSITE IMPERVIOUS AREA	NEW ONSITE LANDSCAPED AREA	NEW DEVELOPED AREA	UNDEVELOPED AREA	TREATMENT METHOD			IMPERVIOUS (AC.)	LANDSCAPED (AC.)
	(AC.)	(AC.)	(AC.)	(AC.)	(AC.)	ID (PRIMARY)	% IMP	% LAND	WP1	WP1
11	1.880	0.053	0.011	0.065	1.815	None				
12	2.607	0.000	0.175	0.175	2.431	None				
15A	0.086	0.059	0.027	0.086	0.000	None				
15	0.273	0.170	0.103	0.273	0.000	None				
20	6.364	0.000	0.118	0.118	6.245	None				
21	3.316	2.113	1.203	3.316	0.000	Sub. Sand Filter (210)	100%	100%	2.113	1.203
22	0.696	0.460	0.237	0.696	0.000	UDF-1 (220)	100%	100%	0.460	0.237
23	0.200	0.000	0.200	0.200	0.000	UDF-1 (220)	100%	100%	0.000	0.200
TOTAL LOTS (AC.)	**15.421**	**2.856**	**2.074**	**4.930**	**10.492**				**2.573**	**1.639**

*TREATED VALUES ONLY INCLUDE AREAS ASSOCIATED WITH THE DEVELOPMENT. OFFSITE AREA NOT INCLUDED IN SITE TREATMENT CALCULATION

TOTAL NEW IMPERVIOUS AREA (SF)	**124,410**	**TOTAL NEW DEVELOPED AREA (SF)**	**214,740**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (SF)	**112,084**	**TOTAL DEV. AREA RECEIVING TREATMENT (SF)**	**183,495**
TOTAL IMPERVIOUS AREA NOT RECEIVING TREATMENT (SF)	**12,326**	**TOTAL DEV. AREA NOT RECEIVING TREATMENT (SF)**	**31,245**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**90.1%**	**% OF DEV. AREA RECEIVING TREATMENT**	**85.4%**

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JOB	14432 - Portland Retirement Community
SHEET NO.	1 OF 1
CALCULATED BY	PDO DATE 10/23/2014
FILE NAME	PRNT DATE 9/17/2015

Task: Determine the "Percentage of Developed Area to Land Available for Development" in accordance with MaineDEP Chapter 500 rules, Section 4.C.(2)(a)(iii) Table 1, amended date August 12, 2015

Table 1 presents Stormwater Treatment Based on Percentage of Parcel Developed

Percentage of developed area to land avail for development*	Percentage of total impervious area requiring treatment**	Percentage of total developed area requiring treatment**
>70	95	80
65	92.5	77.5
<60	90	75

*Including all contiguous land area owned by applicant, but not including land with greater than 25% sustained slope or consisting of a protected natural resource.

**Percentage may be pro-rated for values between 60% and 70% in left-hand column.

A	Total Land Area within R5A Zone:	442,875.00	square-feet
B	Wetland Areas within R5A Zone:	6,481.00	square-feet
C	25% Sustained Slopes:	32,650.00	square-feet
	Land Avail for Development (A-B-C)	403,744.00	square-feet
	Total Developed Area	214,740.00	square-feet
	Percentage of Developed Land	214740.000 / 403,744.00 = **53.19%**	

Perecentage of Developed Land to Land Available for Development is less than 60%, therefore requiring 90% treatment of proposed impervious and 75% treatment of developed area

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JOB	14432 - Portland Retirement Community		
SHEET NO.	1	OF	1
CALCULATED BY	PDO	DATE	7/9/2015
FILE NAME	14432.Subsurface Sand Filter BMP.xls	PRNT DATE	9/9/2015

UNDERDRAINED SUBSURFACE SAND 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 7.3.2
   a. "detain runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
   b. "surface area of the sand filter bed and chamber system must be at least equal to 5% of the impervious area draining to it and 2% of the landscaped area."
   c. "treatment flow rate for the Stormtech Isolcator Row is the projected one year peak flow rate for the drainage area feeding the Isolator Row"

Flow rates:

SC-310	0.10	cfs/chamber
SC-740	0.20	cfs/chamber
DC-780	0.20	cfs/chamber
MC-3500	0.30	cfs/chamber

Tributary to Underdrained Filter #1

Landscaped Area	52,391.00	SF	
Impervious Area	92,058.00	SF	

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	52,387.00	SF	Area	1,047.7	SF
Total Impervious Area	92,058.00	SF	Area	4,602.9	SF
Required Minimum Surface Area				5,650.6	SF
Provided Surface Area				6,000.0	SF

Channel Protection Volume (CPV)

Required (0.4" X Landscaped + 1.0" X Impervious)

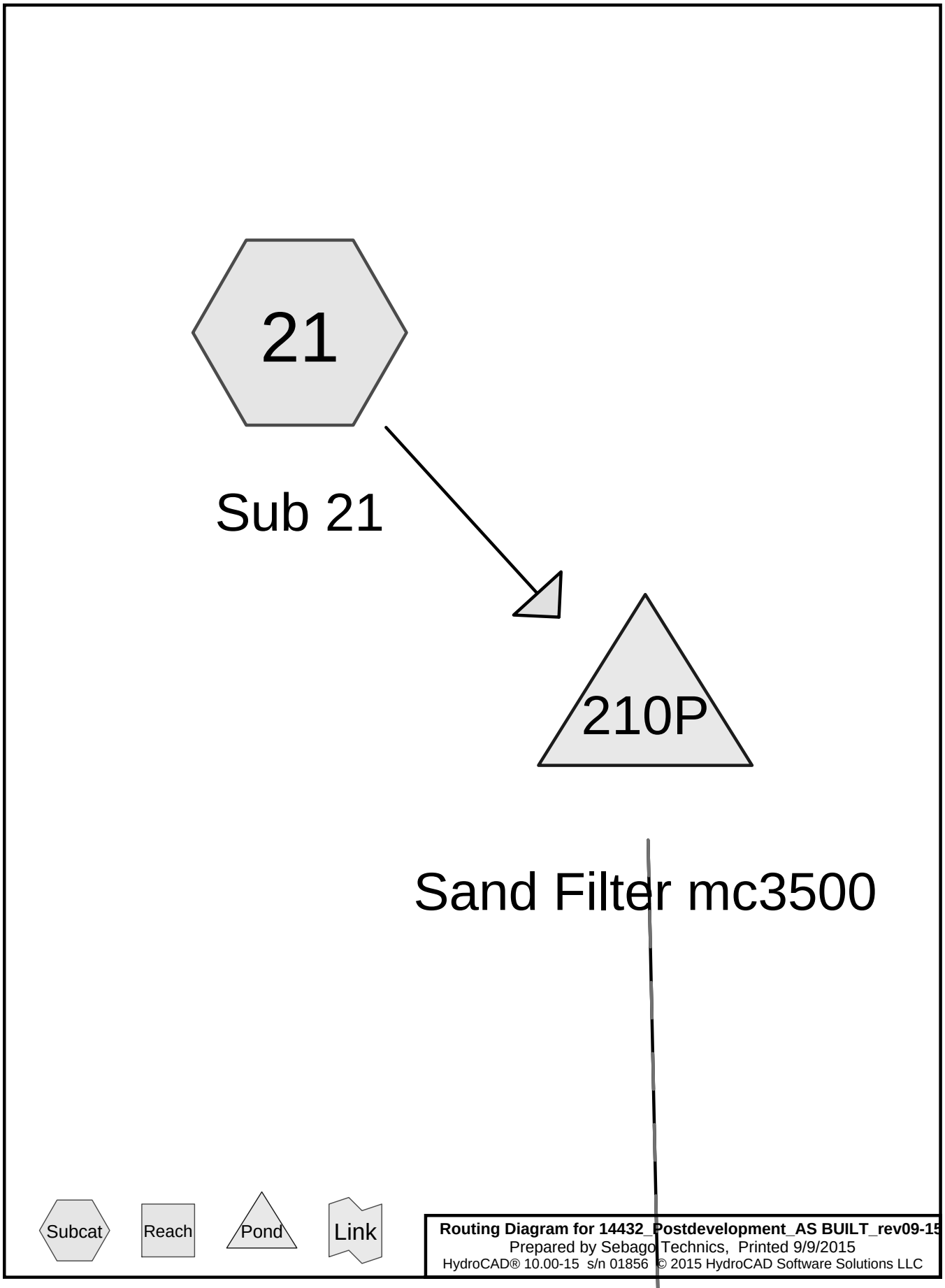
Landscaped Area	52,387.00	SF	Volume	1,746.2			
Impervious Area	92,058.00	SF	Volume	7,671.5			
CPV Required				9,417.7	CF	0.216	AF
Provided CPV				9685	CF	(Elevation 126.80)	

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:		6.80	cfs
Iso Row sizing for:	**MC-3500**	**0.3**	cfs
Total number of Isolator Row Chambers required:		23	

Proposing two row, each 15 chambers long, for total of 30 chambers.


21
Sub 21
210P
Sand Filter mc3500
Subcat
Reach
Pond
Link
Routing Diagram for 14432_Postdevelopment_AS BUILT_rev09-15
Prepared by Sebago Technics, Printed 9/9/2015
HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 21: Sub 21

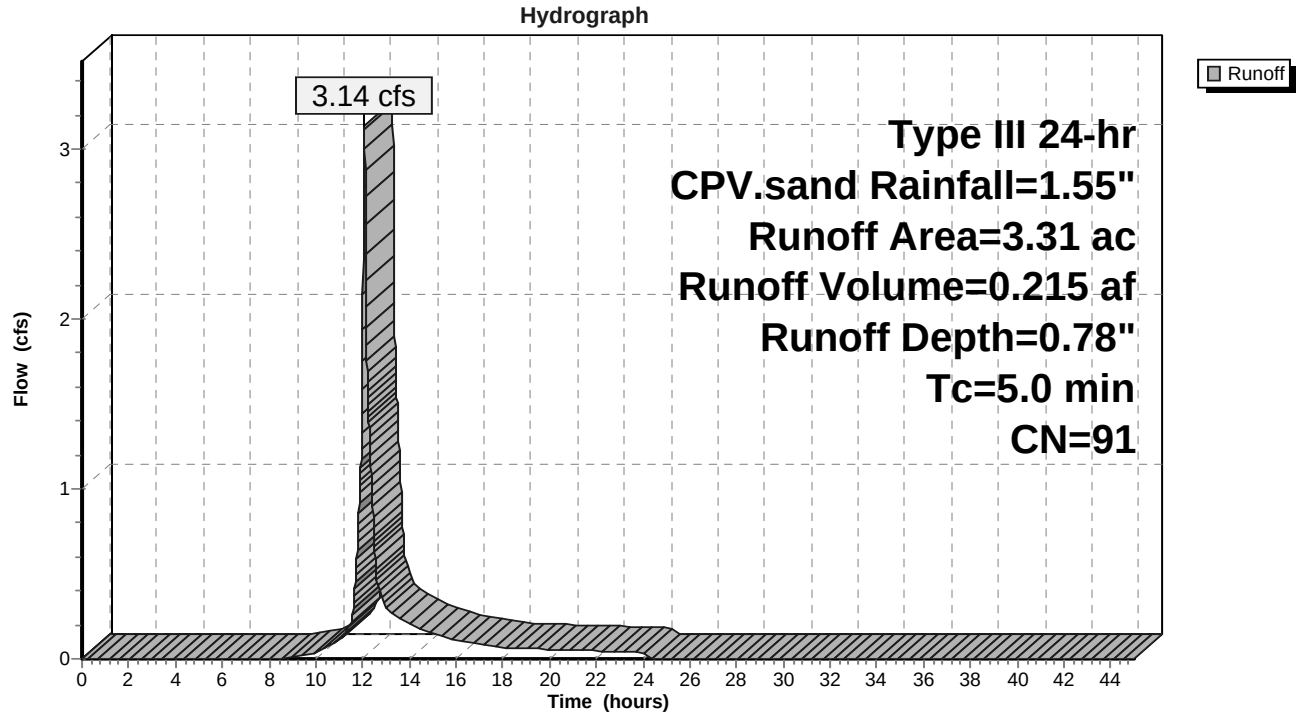
Runoff = 3.14 cfs @ 12.08 hrs, Volume= 0.215 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr CPV.sand Rainfall=1.55"

	Area (ac)	CN	Description
	1.20	80	>75% Grass cover, Good, HSG D
*	2.11	98	Site Development
	3.31	91	Weighted Average
	1.20		36.25% Pervious Area
	2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 21: Sub 21



Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 0.78" for CPV.sand event
Inflow = 3.14 cfs @ 12.08 hrs, Volume= 0.215 af
Outflow = 0.12 cfs @ 15.84 hrs, Volume= 0.215 af, Atten= 96%, Lag= 225.8 min
Primary = 0.12 cfs @ 15.84 hrs, Volume= 0.215 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 126.04' @ 15.84 hrs Surf.Area= 6,773 sf Storage= 5,412 cf

Plug-Flow detention time= 486.2 min calculated for 0.215 af (100% of inflow)
Center-of-Mass det. time= 486.3 min (1,318.1 - 831.9)

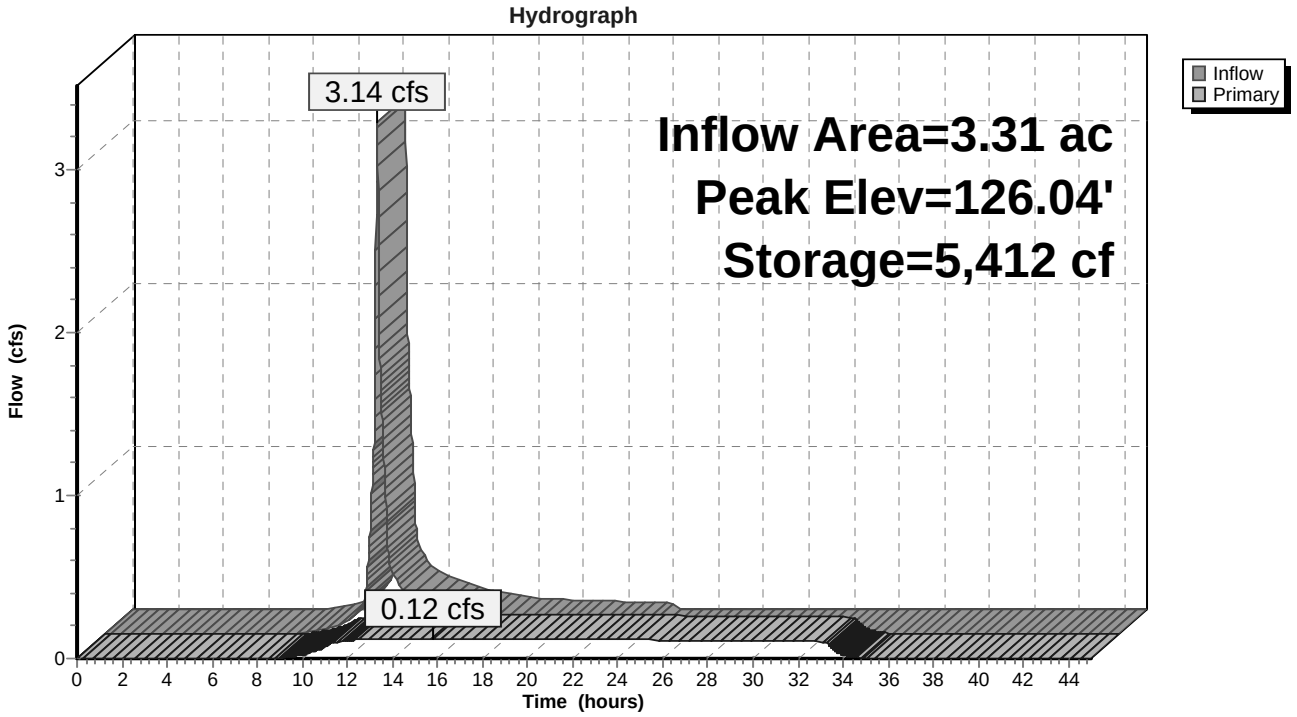
Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=0.12 cfs @ 15.84 hrs HW=126.04' (Free Discharge)
└**1=Culvert** (Passes 0.12 cfs of 12.41 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 10.76 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 210P: Sand Filter mc3500



Stage-Area-Storage for Pond 210P: Sand Filter mc3500

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
124.70	0	125.76	3,832	126.82	9,793	127.88	15,254
124.72	54	125.78	3,948	126.84	9,902	127.90	15,350
124.74	108	125.80	4,063	126.86	10,011	127.92	15,445
124.76	163	125.82	4,178	126.88	10,119	127.94	15,540
124.78	217	125.84	4,293	126.90	10,227	127.96	15,635
124.80	271	125.86	4,408	126.92	10,335	127.98	15,729
124.82	325	125.88	4,523	126.94	10,443	128.00	15,823
124.84	379	125.90	4,638	126.96	10,550	128.02	15,916
124.86	433	125.92	4,753	126.98	10,658	128.04	16,009
124.88	488	125.94	4,867	127.00	10,765	128.06	16,102
124.90	542	125.96	4,982	127.02	10,872	128.08	16,195
124.92	596	125.98	5,096	127.04	10,979	128.10	16,287
124.94	650	126.00	5,211	127.06	11,085	128.12	16,378
124.96	704	126.02	5,325	127.08	11,192	128.14	16,469
124.98	759	126.04	5,439	127.10	11,298	128.16	16,560
125.00	813	126.06	5,553	127.12	11,404	128.18	16,651
125.02	867	126.08	5,667	127.14	11,510	128.20	16,740
125.04	921	126.10	5,781	127.16	11,615	128.22	16,830
125.06	975	126.12	5,895	127.18	11,721	128.24	16,919
125.08	1,029	126.14	6,008	127.20	11,826	128.26	17,007
125.10	1,084	126.16	6,122	127.22	11,931	128.28	17,096
125.12	1,138	126.18	6,235	127.24	12,036	128.30	17,183
125.14	1,192	126.20	6,349	127.26	12,140	128.32	17,270
125.16	1,246	126.22	6,462	127.28	12,244	128.34	17,357
125.18	1,300	126.24	6,575	127.30	12,349	128.36	17,443
125.20	1,355	126.26	6,688	127.32	12,452	128.38	17,529
125.22	1,409	126.28	6,800	127.34	12,556	128.40	17,614
125.24	1,463	126.30	6,913	127.36	12,659	128.42	17,698
125.26	1,517	126.32	7,025	127.38	12,763	128.44	17,782
125.28	1,571	126.34	7,138	127.40	12,866	128.46	17,866
125.30	1,625	126.36	7,250	127.42	12,968	128.48	17,949
125.32	1,680	126.38	7,362	127.44	13,071	128.50	18,031
125.34	1,734	126.40	7,474	127.46	13,173	128.52	18,113
125.36	1,788	126.42	7,586	127.48	13,275	128.54	18,194
125.38	1,842	126.44	7,698	127.50	13,376	128.56	18,274
125.40	1,896	126.46	7,809	127.52	13,478	128.58	18,354
125.42	1,951	126.48	7,921	127.54	13,579	128.60	18,433
125.44	2,005	126.50	8,032	127.56	13,680	128.62	18,511
125.46	2,090	126.52	8,143	127.58	13,780	128.64	18,588
125.48	2,207	126.54	8,254	127.60	13,881	128.66	18,665
125.50	2,324	126.56	8,365	127.62	13,981	128.68	18,741
125.52	2,440	126.58	8,476	127.64	14,080	128.70	18,816
125.54	2,557	126.60	8,587	127.66	14,180	128.72	18,889
125.56	2,673	126.62	8,697	127.68	14,279	128.74	18,962
125.58	2,789	126.64	8,808	127.70	14,378	128.76	19,034
125.60	2,906	126.66	8,918	127.72	14,477	128.78	19,104
125.62	3,022	126.68	9,028	127.74	14,575	128.80	19,173
125.64	3,138	126.70	9,138	127.76	14,673	128.82	19,241
125.66	3,254	126.72	9,247	127.78	14,770	128.84	19,307
125.68	3,370	126.74	9,357	127.80	14,868	128.86	19,372
125.70	3,485	126.76	9,466	127.82	14,965	128.88	19,436
125.72	3,601	126.78	9,576	127.84	15,061	128.90	19,499
125.74	3,717	126.80	9,685	127.86	15,158	128.92	19,561

Stage-Area-Storage for Pond 210P: Sand Filter mc3500 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
128.94	19,622	130.00	22,537	131.06	23,079
128.96	19,682	130.02	22,591	131.08	23,079
128.98	19,742	130.04	22,646	131.10	23,079
129.00	19,802	130.06	22,700	131.12	23,079
129.02	19,861	130.08	22,754	131.14	23,079
129.04	19,920	130.10	22,808	131.16	23,079
129.06	19,978	130.12	22,862	131.18	23,079
129.08	20,035	130.14	22,916	131.20	23,079
129.10	20,092	130.16	22,971	131.22	23,079
129.12	20,149	130.18	23,025	131.24	23,079
129.14	20,205	130.20	**23,079**	131.26	23,079
129.16	20,261	130.22	23,079	131.28	23,079
129.18	20,316	130.24	23,079	131.30	23,079
129.20	20,370	130.26	23,079	131.32	23,079
129.22	20,424	130.28	23,079	131.34	23,079
129.24	20,478	130.30	23,079	131.36	23,079
129.26	20,533	130.32	23,079		
129.28	20,587	130.34	23,079		
129.30	20,641	130.36	23,079		
129.32	20,695	130.38	23,079		
129.34	20,749	130.40	23,079		
129.36	20,803	130.42	23,079		
129.38	20,858	130.44	23,079		
129.40	20,912	130.46	23,079		
129.42	20,966	130.48	23,079		
129.44	21,020	130.50	23,079		
129.46	21,074	130.52	23,079		
129.48	21,128	130.54	23,079		
129.50	21,183	130.56	23,079		
129.52	21,237	130.58	23,079		
129.54	21,291	130.60	23,079		
129.56	21,345	130.62	23,079		
129.58	21,399	130.64	23,079		
129.60	21,454	130.66	23,079		
129.62	21,508	130.68	23,079		
129.64	21,562	130.70	23,079		
129.66	21,616	130.72	23,079		
129.68	21,670	130.74	23,079		
129.70	21,724	130.76	23,079		
129.72	21,779	130.78	23,079		
129.74	21,833	130.80	23,079		
129.76	21,887	130.82	23,079		
129.78	21,941	130.84	23,079		
129.80	21,995	130.86	23,079		
129.82	22,050	130.88	23,079		
129.84	22,104	130.90	23,079		
129.86	22,158	130.92	23,079		
129.88	22,212	130.94	23,079		
129.90	22,266	130.96	23,079		
129.92	22,320	130.98	23,079		
129.94	22,375	131.00	23,079		
129.96	22,429	131.02	23,079		
129.98	22,483	131.04	23,079		

Summary for Subcatchment 21: Sub 21

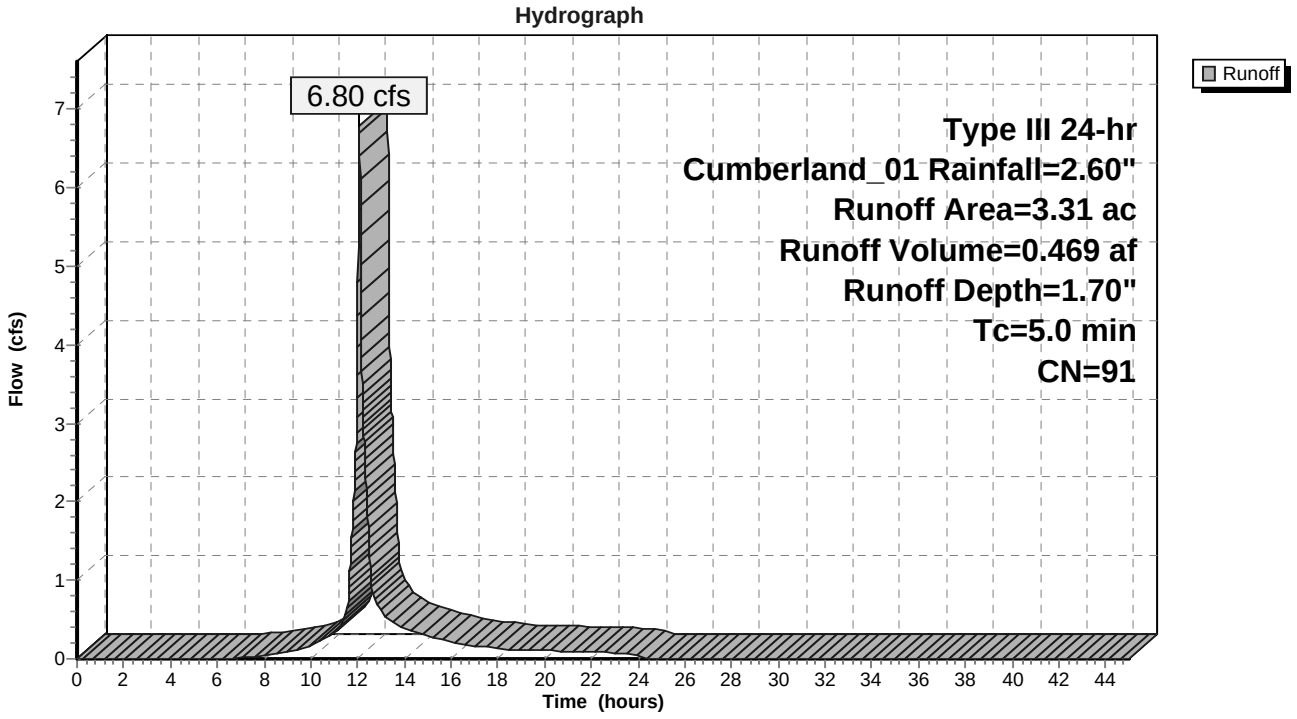
Runoff = 6.80 cfs @ 12.07 hrs, Volume= 0.469 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_01 Rainfall=2.60"

	Area (ac)	CN	Description
	1.20	80	>75% Grass cover, Good, HSG D
*	2.11	98	Site Development
	3.31	91	Weighted Average
	1.20		36.25% Pervious Area
	2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 21: Sub 21



Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 1.70" for Cumberland_01 event
Inflow = 6.80 cfs @ 12.07 hrs, Volume= 0.469 af
Outflow = 0.53 cfs @ 13.21 hrs, Volume= 0.457 af, Atten= 92%, Lag= 68.2 min
Primary = 0.53 cfs @ 13.21 hrs, Volume= 0.457 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 127.06' @ 13.21 hrs Surf.Area= 6,773 sf Storage= 11,078 cf

Plug-Flow detention time= 639.1 min calculated for 0.457 af (97% of inflow)
Center-of-Mass det. time= 623.4 min (1,432.9 - 809.5)

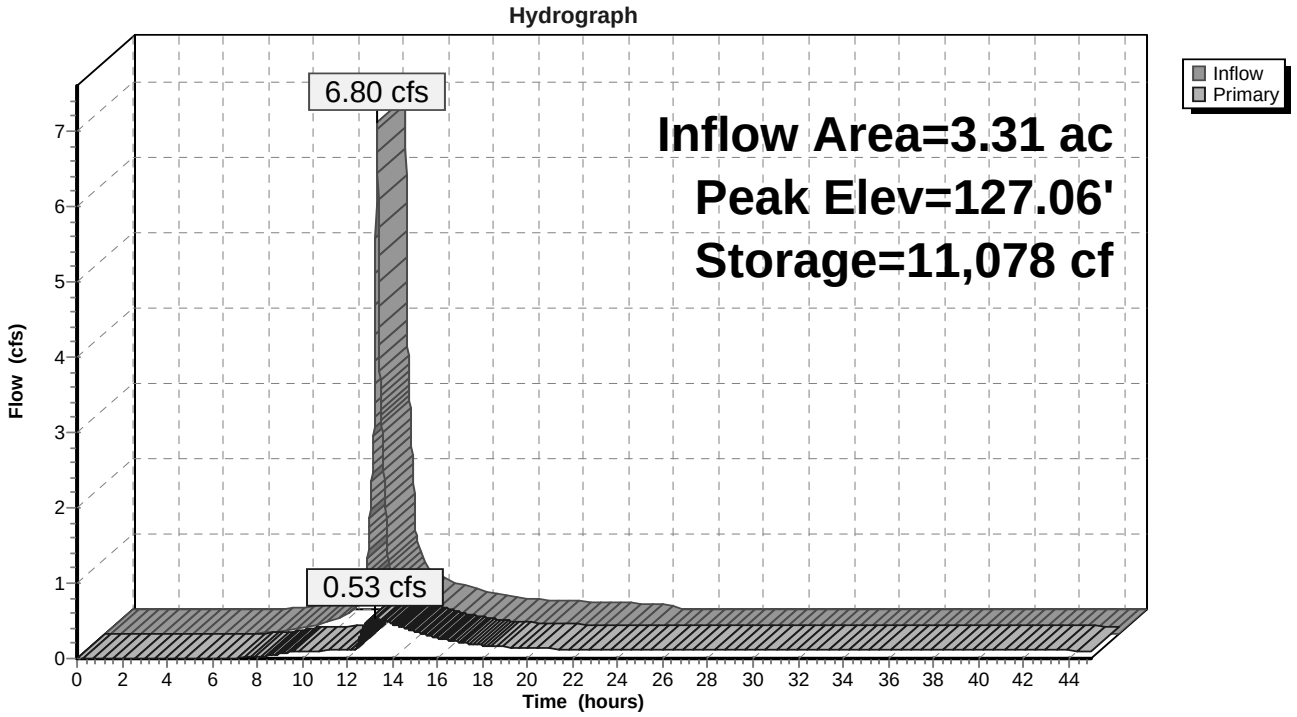
Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=0.52 cfs @ 13.21 hrs HW=127.06' (Free Discharge)
└**1=Culvert** (Passes 0.52 cfs of 13.77 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 11.81 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.40 cfs @ 1.73 fps)
  └**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 210P: Sand Filter mc3500



Stage-Area-Storage for Pond 210P: Sand Filter mc3500

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
124.70	0	125.76	3,832	126.82	9,793	127.88	15,254
124.72	54	125.78	3,948	126.84	9,902	127.90	15,350
124.74	108	125.80	4,063	126.86	10,011	127.92	15,445
124.76	163	125.82	4,178	126.88	10,119	127.94	15,540
124.78	217	125.84	4,293	126.90	10,227	127.96	15,635
124.80	271	125.86	4,408	126.92	10,335	127.98	15,729
124.82	325	125.88	4,523	126.94	10,443	128.00	15,823
124.84	379	125.90	4,638	126.96	10,550	128.02	15,916
124.86	433	125.92	4,753	126.98	10,658	128.04	16,009
124.88	488	125.94	4,867	127.00	10,765	128.06	16,102
124.90	542	125.96	4,982	127.02	10,872	128.08	16,195
124.92	596	125.98	5,096	127.04	10,979	128.10	16,287
124.94	650	126.00	5,211	127.06	11,085	128.12	16,378
124.96	704	126.02	5,325	127.08	11,192	128.14	16,469
124.98	759	126.04	5,439	127.10	11,298	128.16	16,560
125.00	813	126.06	5,553	127.12	11,404	128.18	16,651
125.02	867	126.08	5,667	127.14	11,510	128.20	16,740
125.04	921	126.10	5,781	127.16	11,615	128.22	16,830
125.06	975	126.12	5,895	127.18	11,721	128.24	16,919
125.08	1,029	126.14	6,008	127.20	11,826	128.26	17,007
125.10	1,084	126.16	6,122	127.22	11,931	128.28	17,096
125.12	1,138	126.18	6,235	127.24	12,036	128.30	17,183
125.14	1,192	126.20	6,349	127.26	12,140	128.32	17,270
125.16	1,246	126.22	6,462	127.28	12,244	128.34	17,357
125.18	1,300	126.24	6,575	127.30	12,349	128.36	17,443
125.20	1,355	126.26	6,688	127.32	12,452	128.38	17,529
125.22	1,409	126.28	6,800	127.34	12,556	128.40	17,614
125.24	1,463	126.30	6,913	127.36	12,659	128.42	17,698
125.26	1,517	126.32	7,025	127.38	12,763	128.44	17,782
125.28	1,571	126.34	7,138	127.40	12,866	128.46	17,866
125.30	1,625	126.36	7,250	127.42	12,968	128.48	17,949
125.32	1,680	126.38	7,362	127.44	13,071	128.50	18,031
125.34	1,734	126.40	7,474	127.46	13,173	128.52	18,113
125.36	1,788	126.42	7,586	127.48	13,275	128.54	18,194
125.38	1,842	126.44	7,698	127.50	13,376	128.56	18,274
125.40	1,896	126.46	7,809	127.52	13,478	128.58	18,354
125.42	1,951	126.48	7,921	127.54	13,579	128.60	18,433
125.44	2,005	126.50	8,032	127.56	13,680	128.62	18,511
125.46	2,090	126.52	8,143	127.58	13,780	128.64	18,588
125.48	2,207	126.54	8,254	127.60	13,881	128.66	18,665
125.50	2,324	126.56	8,365	127.62	13,981	128.68	18,741
125.52	2,440	126.58	8,476	127.64	14,080	128.70	18,816
125.54	2,557	126.60	8,587	127.66	14,180	128.72	18,889
125.56	2,673	126.62	8,697	127.68	14,279	128.74	18,962
125.58	2,789	126.64	8,808	127.70	14,378	128.76	19,034
125.60	2,906	126.66	8,918	127.72	14,477	128.78	19,104
125.62	3,022	126.68	9,028	127.74	14,575	128.80	19,173
125.64	3,138	126.70	9,138	127.76	14,673	128.82	19,241
125.66	3,254	126.72	9,247	127.78	14,770	128.84	19,307
125.68	3,370	126.74	9,357	127.80	14,868	128.86	19,372
125.70	3,485	126.76	9,466	127.82	14,965	128.88	19,436
125.72	3,601	126.78	9,576	127.84	15,061	128.90	19,499
125.74	3,717	126.80	9,685	127.86	15,158	128.92	19,561

Stage-Area-Storage for Pond 210P: Sand Filter mc3500 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
128.94	19,622	130.00	22,537	131.06	23,079
128.96	19,682	130.02	22,591	131.08	23,079
128.98	19,742	130.04	22,646	131.10	23,079
129.00	19,802	130.06	22,700	131.12	23,079
129.02	19,861	130.08	22,754	131.14	23,079
129.04	19,920	130.10	22,808	131.16	23,079
129.06	19,978	130.12	22,862	131.18	23,079
129.08	20,035	130.14	22,916	131.20	23,079
129.10	20,092	130.16	22,971	131.22	23,079
129.12	20,149	130.18	23,025	131.24	23,079
129.14	20,205	130.20	**23,079**	131.26	23,079
129.16	20,261	130.22	23,079	131.28	23,079
129.18	20,316	130.24	23,079	131.30	23,079
129.20	20,370	130.26	23,079	131.32	23,079
129.22	20,424	130.28	23,079	131.34	23,079
129.24	20,478	130.30	23,079	131.36	23,079
129.26	20,533	130.32	23,079		
129.28	20,587	130.34	23,079		
129.30	20,641	130.36	23,079		
129.32	20,695	130.38	23,079		
129.34	20,749	130.40	23,079		
129.36	20,803	130.42	23,079		
129.38	20,858	130.44	23,079		
129.40	20,912	130.46	23,079		
129.42	20,966	130.48	23,079		
129.44	21,020	130.50	23,079		
129.46	21,074	130.52	23,079		
129.48	21,128	130.54	23,079		
129.50	21,183	130.56	23,079		
129.52	21,237	130.58	23,079		
129.54	21,291	130.60	23,079		
129.56	21,345	130.62	23,079		
129.58	21,399	130.64	23,079		
129.60	21,454	130.66	23,079		
129.62	21,508	130.68	23,079		
129.64	21,562	130.70	23,079		
129.66	21,616	130.72	23,079		
129.68	21,670	130.74	23,079		
129.70	21,724	130.76	23,079		
129.72	21,779	130.78	23,079		
129.74	21,833	130.80	23,079		
129.76	21,887	130.82	23,079		
129.78	21,941	130.84	23,079		
129.80	21,995	130.86	23,079		
129.82	22,050	130.88	23,079		
129.84	22,104	130.90	23,079		
129.86	22,158	130.92	23,079		
129.88	22,212	130.94	23,079		
129.90	22,266	130.96	23,079		
129.92	22,320	130.98	23,079		
129.94	22,375	131.00	23,079		
129.96	22,429	131.02	23,079		
129.98	22,483	131.04	23,079		

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 1A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	14432 - Portland Retirement Residence		
SHEET NO.	1	OF	1
CALCULATED BY	PDO	DATE	8/7/2015
FILE NAME		PRNT DATE	9/9/2015

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"

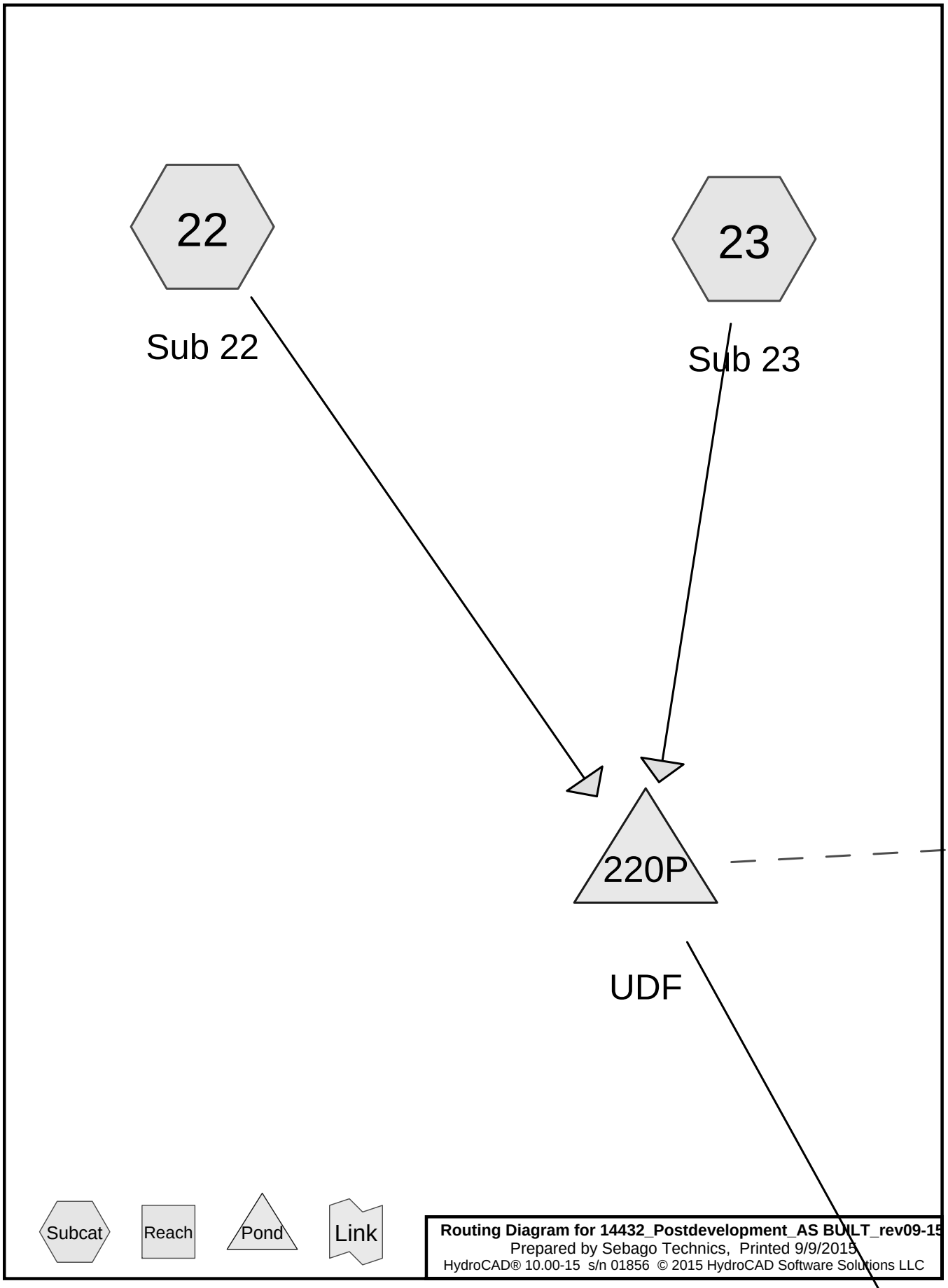
Tributary to Underdrained Filter #1

Landscaped Area	19,020.00	SF				
Impervious Area	20,026.00	SF				
Minimum Surface Area						
Required	(2% X Landscaped + 5%" X Impervious)					
Total Landscaped Area	19,020.00	SF	Area	380.4	SF	
Total Impervious Area	20,026.00	SF	Area	1,001.3	SF	
Required Minimum Surface Area				1,381.7	SF	
Provided Surface Area				2,326.0	SF	
Channel Protection Volume (CPV)						
Required	(0.4" X Landscaped + 1.0" X Impervious)					
Landscaped Area	19,020.00	SF	Volume	634.0		
Impervious Area	20,026.00	SF	Volume	1,668.8		
CPV Required				2,302.8	CF	0.053 AF
Provided CPV				2,900.0	CF	(Elevation 125.00 to 126.00)

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:	20,026.00	SF				
Sediment Volume	23	CF				
Provided	52	CF	6	Inch Deep Forebay	with area of	104 sf



Routing Diagram for 14432_Postdevelopment_AS BUILT_rev09-15
Prepared by Sebago Technics, Printed 9/9/2015
HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 22: Sub 22

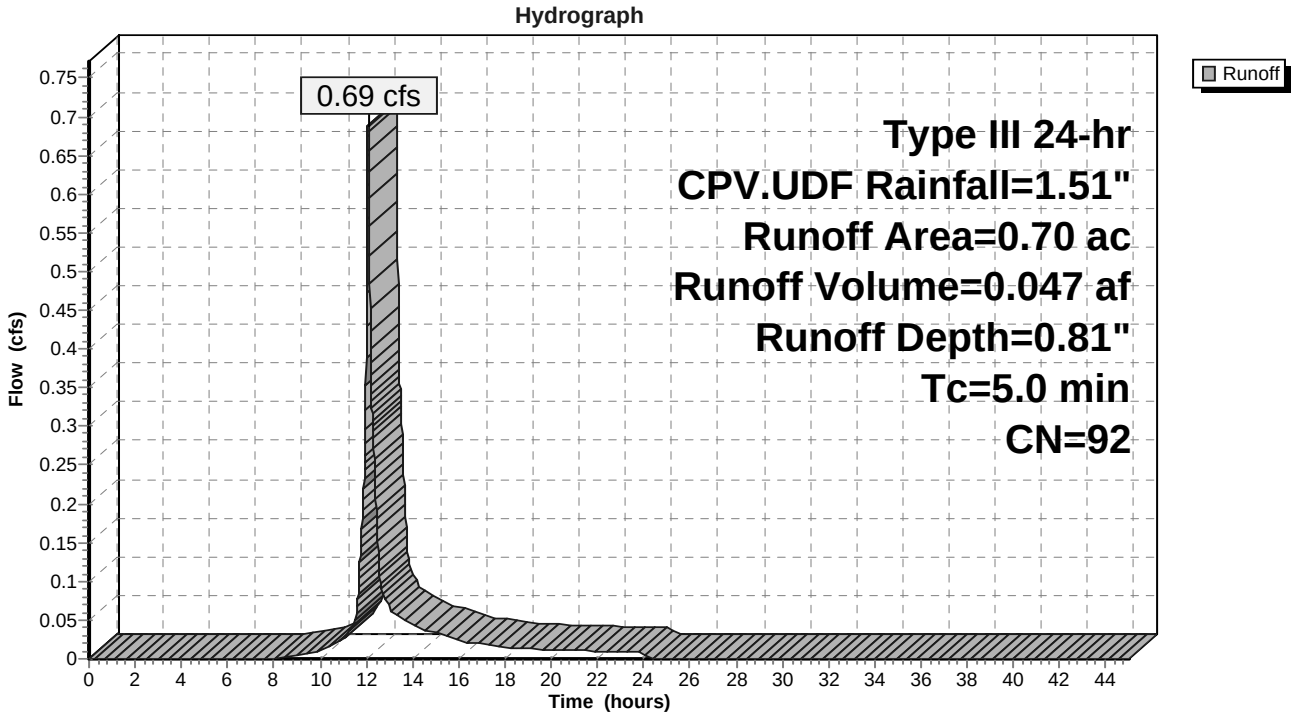
Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.047 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr CPV.UDF Rainfall=1.51"

	Area (ac)	CN	Description
*	0.45	98	Site Development
	0.25	80	>75% Grass cover, Good, HSG D
	0.70	92	Weighted Average
	0.25		35.71% Pervious Area
	0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 22: Sub 22



Summary for Subcatchment 23: Sub 23

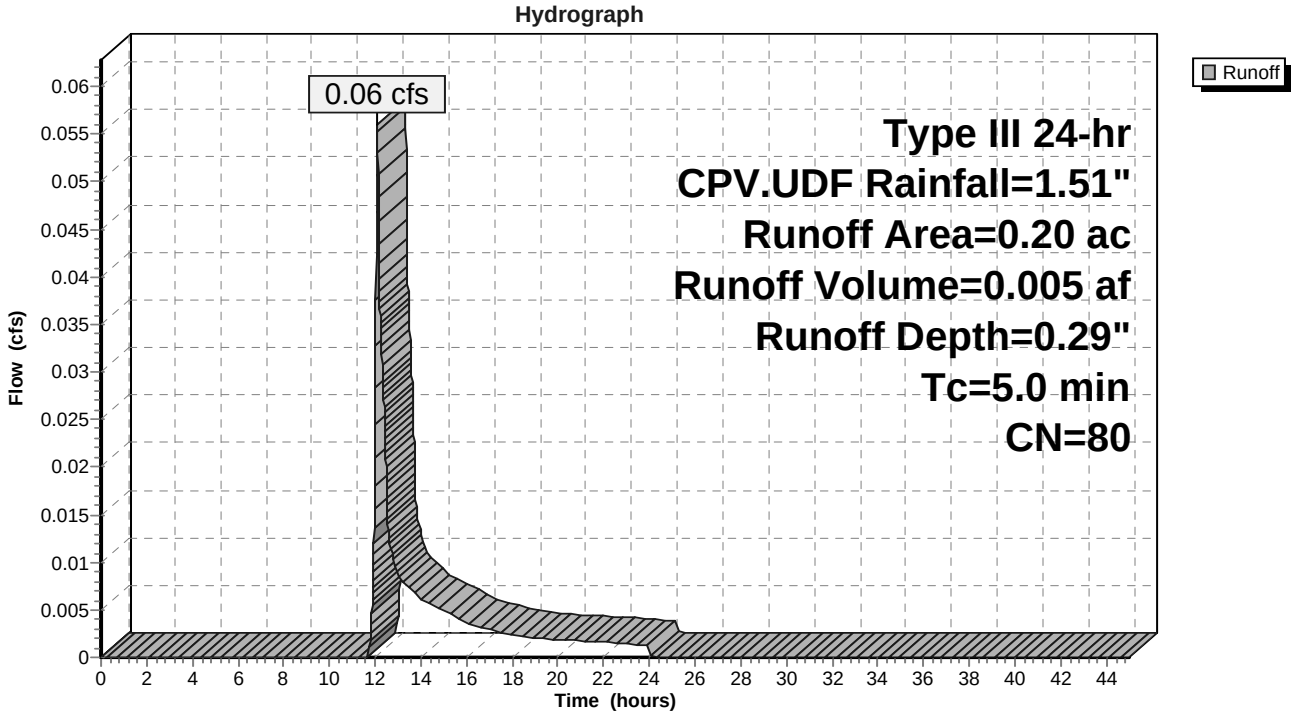
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr CPV.UDF Rainfall=1.51"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 23: Sub 23



Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 0.69" for CPV.UDF event
Inflow = 0.74 cfs @ 12.08 hrs, Volume= 0.052 af
Outflow = 0.03 cfs @ 15.33 hrs, Volume= 0.052 af, Atten= 95%, Lag= 194.9 min
Primary = 0.03 cfs @ 15.33 hrs, Volume= 0.052 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 125.49' @ 15.33 hrs Surf.Area= 2,643 sf Storage= 1,215 cf

Plug-Flow detention time= 375.9 min calculated for 0.052 af (100% of inflow)
Center-of-Mass det. time= 376.0 min (1,209.2 - 833.2)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

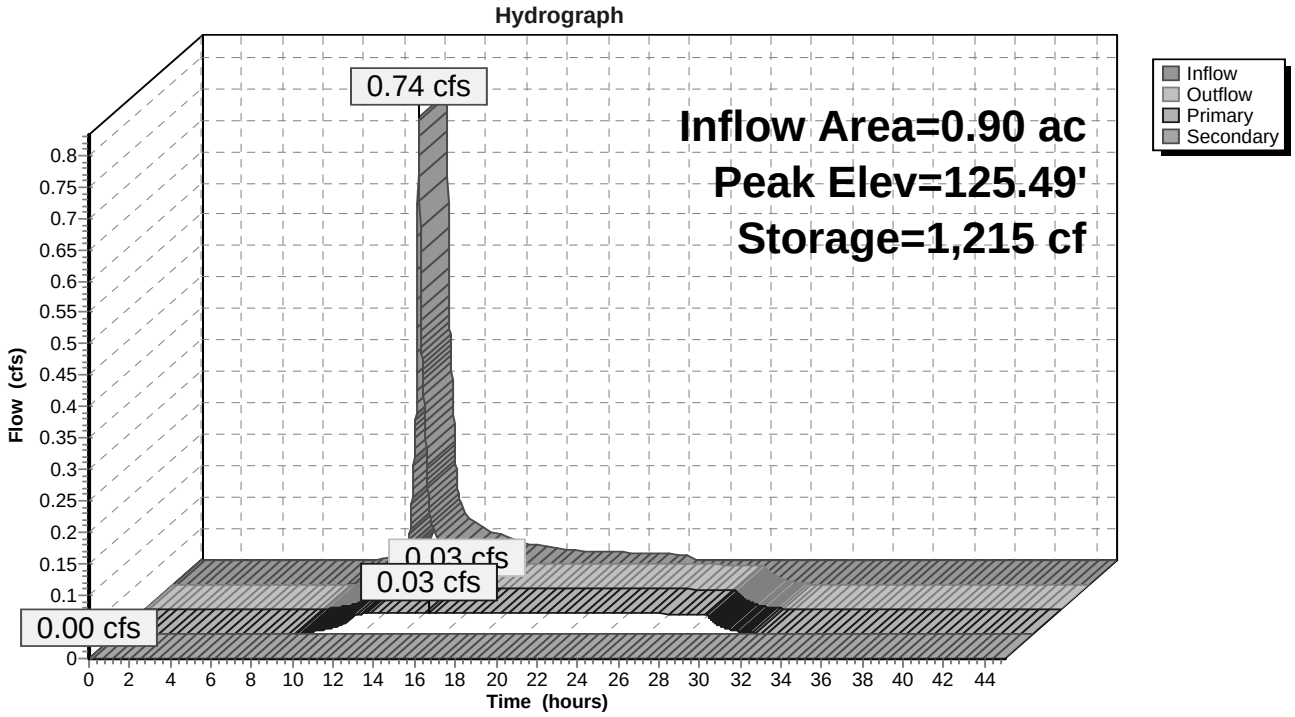
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**4.0" Vert. Orifice/Grate X 4.00** C= 0.600
#5	Device 1	127.00'	**20.0" Vert. Orifice/Grate** C= 0.600
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.03 cfs @ 15.33 hrs HW=125.49' (Free Discharge)
└**1=Culvert** (Passes 0.03 cfs of 4.95 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 7.80 fps)
    └**3=Exfiltration** (Passes 0.03 cfs of 0.15 cfs potential flow)
  └**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 220P: UDF



Stage-Area-Storage for Pond 220P: UDF

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
125.00	2,326	0	125.53	2,669	1,324
125.01	2,332	23	125.54	2,676	1,351
125.02	2,339	47	125.55	2,682	1,377
125.03	2,345	70	125.56	2,689	1,404
125.04	2,352	94	125.57	2,695	1,431
125.05	2,358	117	125.58	2,702	1,458
125.06	2,365	141	125.59	2,708	1,485
125.07	2,371	164	125.60	2,715	1,512
125.08	2,378	188	125.61	2,721	1,539
125.09	2,384	212	125.62	2,728	1,567
125.10	2,391	236	125.63	2,734	1,594
125.11	2,397	260	125.64	2,741	1,621
125.12	2,404	284	125.65	2,747	1,649
125.13	2,410	308	125.66	2,754	1,676
125.14	2,417	332	125.67	2,760	1,704
125.15	2,423	356	125.68	2,767	1,731
125.16	2,430	380	125.69	2,773	1,759
125.17	2,436	405	125.70	2,780	1,787
125.18	2,443	429	125.71	2,786	1,815
125.19	2,449	454	125.72	2,793	1,843
125.20	2,456	478	125.73	2,799	1,871
125.21	2,462	503	125.74	2,806	1,899
125.22	2,469	527	125.75	2,812	1,927
125.23	2,475	552	125.76	2,818	1,955
125.24	2,482	577	125.77	2,825	1,983
125.25	2,488	602	125.78	2,831	2,011
125.26	2,494	627	125.79	2,838	2,040
125.27	2,501	652	125.80	2,844	2,068
125.28	2,507	677	125.81	2,851	2,097
125.29	2,514	702	125.82	2,857	2,125
125.30	2,520	727	125.83	2,864	2,154
125.31	2,527	752	125.84	2,870	2,182
125.32	2,533	777	125.85	2,877	2,211
125.33	2,540	803	125.86	2,883	2,240
125.34	2,546	828	125.87	2,890	2,269
125.35	2,553	854	125.88	2,896	2,298
125.36	2,559	879	125.89	2,903	2,327
125.37	2,566	905	125.90	2,909	2,356
125.38	2,572	931	125.91	2,916	2,385
125.39	2,579	956	125.92	2,922	2,414
125.40	2,585	982	125.93	2,929	2,443
125.41	2,592	1,008	125.94	2,935	2,473
125.42	2,598	1,034	125.95	2,942	2,502
125.43	2,605	1,060	125.96	2,948	2,532
125.44	2,611	1,086	125.97	2,955	2,561
125.45	2,618	1,112	125.98	2,961	2,591
125.46	2,624	1,139	125.99	2,968	2,620
125.47	2,631	1,165	126.00	2,974	2,650
125.48	2,637	1,191	126.01	2,984	2,680
125.49	2,644	1,218	126.02	2,995	2,710
125.50	2,650	1,244	126.03	3,005	2,740
125.51	2,656	1,271	126.04	3,015	2,770
125.52	2,663	1,297	126.05	3,025	2,800

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
126.06	3,036	2,830	126.59	3,579	4,583
126.07	3,046	2,861	126.60	3,590	4,619
126.08	3,056	2,891	126.61	3,600	4,655
126.09	3,066	2,922	126.62	3,610	4,691
126.10	3,077	2,953	126.63	3,620	4,727
126.11	3,087	2,983	126.64	3,631	4,763
126.12	3,097	3,014	126.65	3,641	4,800
126.13	3,107	3,045	126.66	3,651	4,836
126.14	3,118	3,076	126.67	3,661	4,873
126.15	3,128	3,108	126.68	3,672	4,910
126.16	3,138	3,139	126.69	3,682	4,946
126.17	3,148	3,170	126.70	3,692	4,983
126.18	3,159	3,202	126.71	3,702	5,020
126.19	3,169	3,234	126.72	3,713	5,057
126.20	3,179	3,265	126.73	3,723	5,094
126.21	3,189	3,297	126.74	3,733	5,132
126.22	3,200	3,329	126.75	3,744	5,169
126.23	3,210	3,361	126.76	3,754	5,207
126.24	3,220	3,393	126.77	3,764	5,244
126.25	3,231	3,426	126.78	3,774	5,282
126.26	3,241	3,458	126.79	3,785	5,320
126.27	3,251	3,490	126.80	3,795	5,358
126.28	3,261	3,523	126.81	3,805	5,396
126.29	3,272	3,556	126.82	3,815	5,434
126.30	3,282	3,588	126.83	3,826	5,472
126.31	3,292	3,621	126.84	3,836	5,510
126.32	3,302	3,654	126.85	3,846	5,549
126.33	3,313	3,687	126.86	3,856	5,587
126.34	3,323	3,720	126.87	3,867	5,626
126.35	3,333	3,754	126.88	3,877	5,664
126.36	3,343	3,787	126.89	3,887	5,703
126.37	3,354	3,821	126.90	3,897	5,742
126.38	3,364	3,854	126.91	3,908	5,781
126.39	3,374	3,888	126.92	3,918	5,820
126.40	3,384	3,922	126.93	3,928	5,860
126.41	3,395	3,956	126.94	3,938	5,899
126.42	3,405	3,990	126.95	3,949	5,938
126.43	3,415	4,024	126.96	3,959	5,978
126.44	3,425	4,058	126.97	3,969	6,017
126.45	3,436	4,092	126.98	3,979	6,057
126.46	3,446	4,127	126.99	3,990	6,097
126.47	3,456	4,161	127.00	4,000	6,137
126.48	3,466	4,196	127.01	4,008	6,177
126.49	3,477	4,230	127.02	4,016	6,217
126.50	3,487	4,265	127.03	4,023	6,257
126.51	3,497	4,300	127.04	4,031	6,298
126.52	3,508	4,335	127.05	4,039	6,338
126.53	3,518	4,370	127.06	4,047	6,378
126.54	3,528	4,406	127.07	4,055	6,419
126.55	3,538	4,441	127.08	4,062	6,459
126.56	3,549	4,476	127.09	4,070	6,500
126.57	3,559	4,512	127.10	4,078	6,541
126.58	3,569	4,547	127.11	4,086	6,582

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
127.12	4,094	6,623	127.65	4,507	8,902
127.13	4,101	6,664	127.66	4,515	8,947
127.14	4,109	6,705	127.67	4,523	8,992
127.15	4,117	6,746	127.68	4,530	9,037
127.16	4,125	6,787	127.69	4,538	9,083
127.17	4,133	6,828	127.70	4,546	9,128
127.18	4,140	6,870	127.71	4,554	9,174
127.19	4,148	6,911	127.72	4,562	9,219
127.20	4,156	6,953	127.73	4,569	9,265
127.21	4,164	6,994	127.74	4,577	9,311
127.22	4,172	7,036	127.75	4,585	9,356
127.23	4,179	7,078	127.76	4,593	9,402
127.24	4,187	7,119	127.77	4,601	9,448
127.25	4,195	7,161	127.78	4,608	9,494
127.26	4,203	7,203	127.79	4,616	9,540
127.27	4,211	7,245	127.80	4,624	9,587
127.28	4,218	7,288	127.81	4,632	9,633
127.29	4,226	7,330	127.82	4,640	9,679
127.30	4,234	7,372	127.83	4,647	9,726
127.31	4,242	7,414	127.84	4,655	9,772
127.32	4,250	7,457	127.85	4,663	9,819
127.33	4,257	7,499	127.86	4,671	9,865
127.34	4,265	7,542	127.87	4,679	9,912
127.35	4,273	7,585	127.88	4,686	9,959
127.36	4,281	7,628	127.89	4,694	10,006
127.37	4,289	7,670	127.90	4,702	10,053
127.38	4,296	7,713	127.91	4,710	10,100
127.39	4,304	7,756	127.92	4,718	10,147
127.40	4,312	7,799	127.93	4,725	10,194
127.41	4,320	7,843	127.94	4,733	10,242
127.42	4,328	7,886	127.95	4,741	10,289
127.43	4,335	7,929	127.96	4,749	10,336
127.44	4,343	7,973	127.97	4,757	10,384
127.45	4,351	8,016	127.98	4,764	10,432
127.46	4,359	8,060	127.99	4,772	10,479
127.47	4,367	8,103	128.00	**4,780**	**10,527**
127.48	4,374	8,147	128.01	4,780	10,527
127.49	4,382	8,191	128.02	4,780	10,527
127.50	4,390	8,235	128.03	4,780	10,527
127.51	4,398	8,278	128.04	4,780	10,527
127.52	4,406	8,322	128.05	4,780	10,527
127.53	4,413	8,367	128.06	4,780	10,527
127.54	4,421	8,411	128.07	4,780	10,527
127.55	4,429	8,455	128.08	4,780	10,527
127.56	4,437	8,499	128.09	4,780	10,527
127.57	4,445	8,544	128.10	4,780	10,527
127.58	4,452	8,588	128.11	4,780	10,527
127.59	4,460	8,633	128.12	4,780	10,527
127.60	4,468	8,677	128.13	4,780	10,527
127.61	4,476	8,722	128.14	4,780	10,527
127.62	4,484	8,767	128.15	4,780	10,527
127.63	4,491	8,812	128.16	4,780	10,527
127.64	4,499	8,857	128.17	4,780	10,527

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
128.18	4,780	10,527
128.19	4,780	10,527
128.20	4,780	10,527
128.21	4,780	10,527
128.22	4,780	10,527
128.23	4,780	10,527
128.24	4,780	10,527
128.25	4,780	10,527
128.26	4,780	10,527
128.27	4,780	10,527
128.28	4,780	10,527
128.29	4,780	10,527
128.30	4,780	10,527
128.31	4,780	10,527
128.32	4,780	10,527
128.33	4,780	10,527
128.34	4,780	10,527
128.35	4,780	10,527
128.36	4,780	10,527
128.37	4,780	10,527
128.38	4,780	10,527
128.39	4,780	10,527
128.40	4,780	10,527
128.41	4,780	10,527
128.42	4,780	10,527
128.43	4,780	10,527
128.44	4,780	10,527
128.45	4,780	10,527
128.46	4,780	10,527
128.47	4,780	10,527
128.48	4,780	10,527
128.49	4,780	10,527
128.50	4,780	10,527
128.51	4,780	10,527
128.52	4,780	10,527
128.53	4,780	10,527
128.54	4,780	10,527
128.55	4,780	10,527
128.56	4,780	10,527
128.57	4,780	10,527
128.58	4,780	10,527
128.59	4,780	10,527
128.60	4,780	10,527
128.61	4,780	10,527
128.62	4,780	10,527
128.63	4,780	10,527
128.64	4,780	10,527
128.65	4,780	10,527
128.66	4,780	10,527
128.67	4,780	10,527

Summary for Subcatchment 22: Sub 22

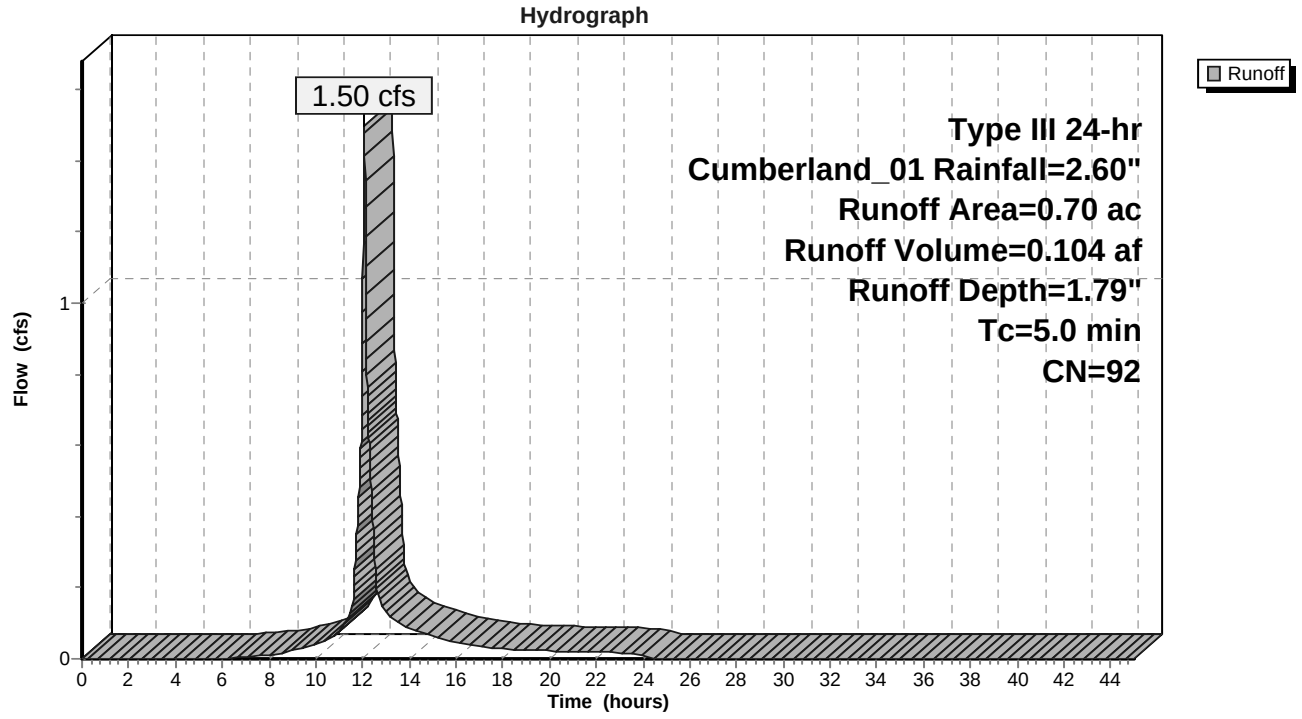
Runoff = 1.50 cfs @ 12.07 hrs, Volume= 0.104 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_01 Rainfall=2.60"

	Area (ac)	CN	Description
*	0.45	98	Site Development
	0.25	80	>75% Grass cover, Good, HSG D
	0.70	92	Weighted Average
	0.25		35.71% Pervious Area
	0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 22: Sub 22



Summary for Subcatchment 23: Sub 23

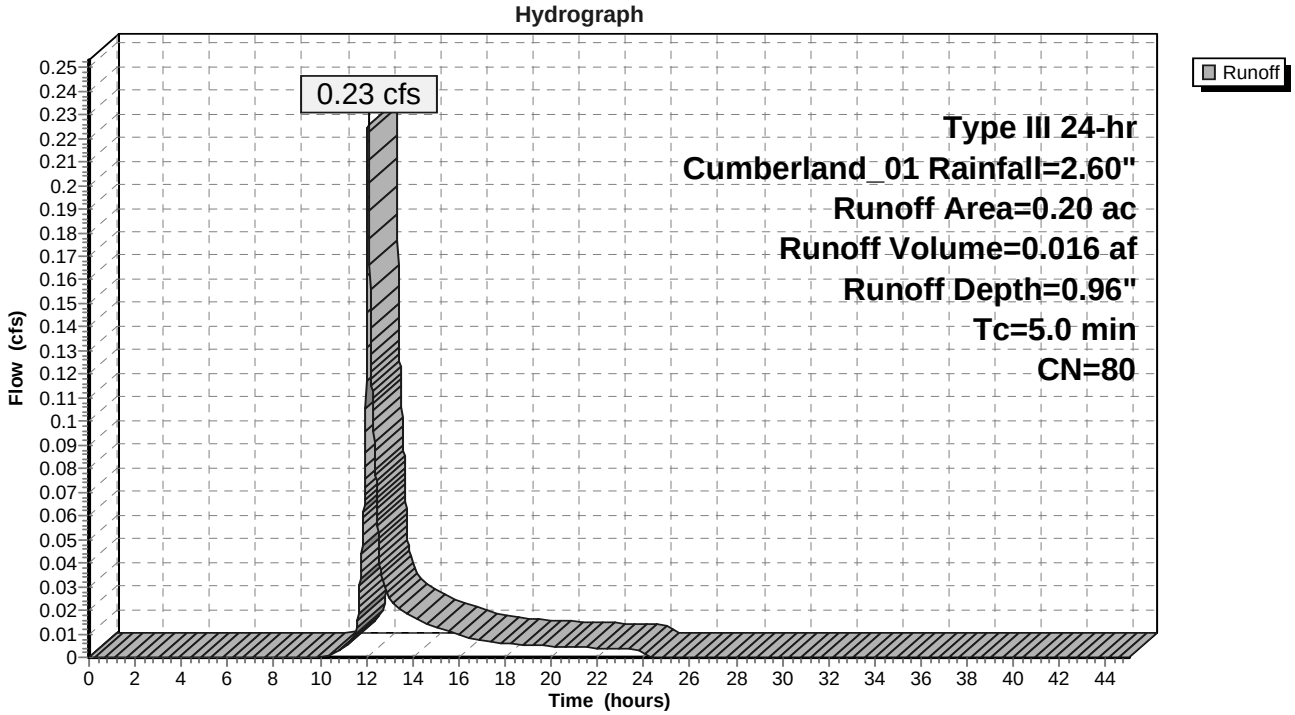
Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_01 Rainfall=2.60"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 23: Sub 23



Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 1.60" for Cumberland_01 event
Inflow = 1.73 cfs @ 12.07 hrs, Volume= 0.120 af
Outflow = 0.12 cfs @ 13.69 hrs, Volume= 0.120 af, Atten= 93%, Lag= 97.1 min
Primary = 0.12 cfs @ 13.69 hrs, Volume= 0.120 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 126.09' @ 13.69 hrs Surf.Area= 3,064 sf Storage= 2,916 cf

Plug-Flow detention time= 641.7 min calculated for 0.120 af (100% of inflow)
Center-of-Mass det. time= 641.1 min (1,452.1 - 811.0)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

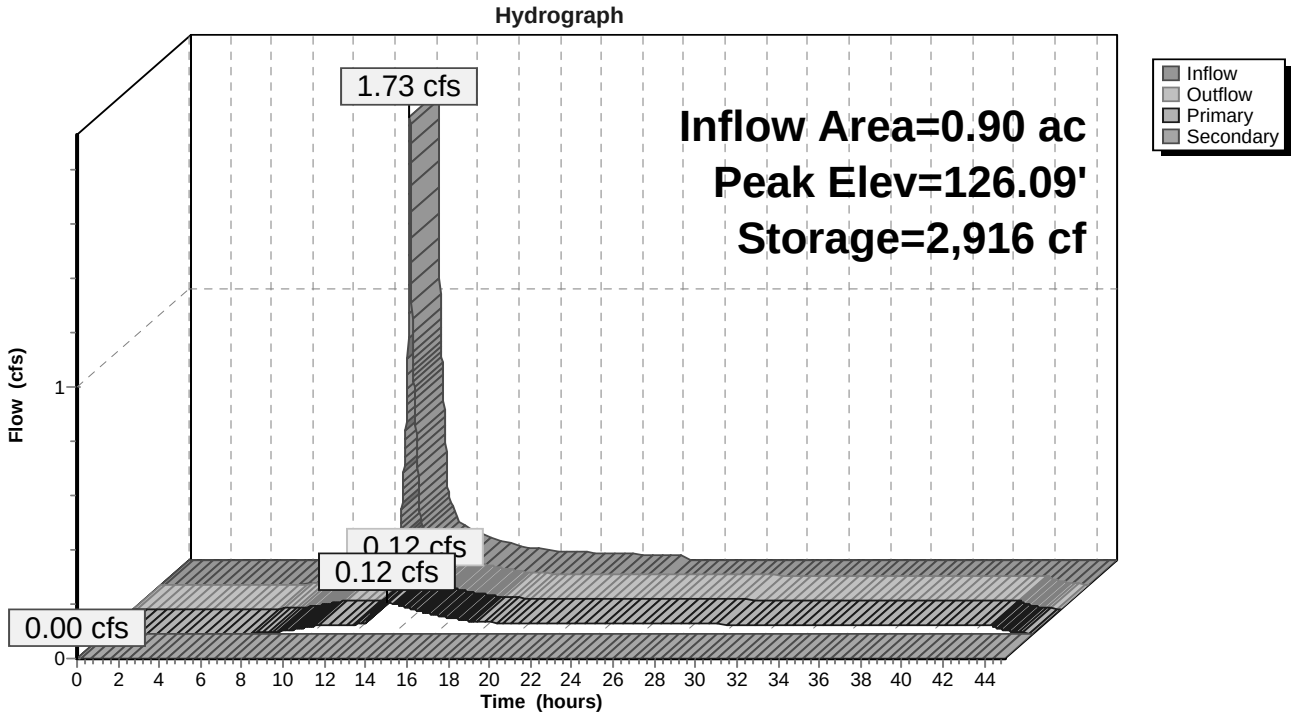
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**4.0" Vert. Orifice/Grate X 4.00** C= 0.600
#5	Device 1	127.00'	**20.0" Vert. Orifice/Grate** C= 0.600
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.11 cfs @ 13.69 hrs HW=126.09' (Free Discharge)
└**1=Culvert** (Passes 0.11 cfs of 5.58 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 8.64 fps)
  │ └**3=Exfiltration** (Passes 0.04 cfs of 0.17 cfs potential flow)
  ├**4=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.01 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 220P: UDF



Stage-Area-Storage for Pond 220P: UDF

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
125.00	2,326	0	125.53	2,669	1,324
125.01	2,332	23	125.54	2,676	1,351
125.02	2,339	47	125.55	2,682	1,377
125.03	2,345	70	125.56	2,689	1,404
125.04	2,352	94	125.57	2,695	1,431
125.05	2,358	117	125.58	2,702	1,458
125.06	2,365	141	125.59	2,708	1,485
125.07	2,371	164	125.60	2,715	1,512
125.08	2,378	188	125.61	2,721	1,539
125.09	2,384	212	125.62	2,728	1,567
125.10	2,391	236	125.63	2,734	1,594
125.11	2,397	260	125.64	2,741	1,621
125.12	2,404	284	125.65	2,747	1,649
125.13	2,410	308	125.66	2,754	1,676
125.14	2,417	332	125.67	2,760	1,704
125.15	2,423	356	125.68	2,767	1,731
125.16	2,430	380	125.69	2,773	1,759
125.17	2,436	405	125.70	2,780	1,787
125.18	2,443	429	125.71	2,786	1,815
125.19	2,449	454	125.72	2,793	1,843
125.20	2,456	478	125.73	2,799	1,871
125.21	2,462	503	125.74	2,806	1,899
125.22	2,469	527	125.75	2,812	1,927
125.23	2,475	552	125.76	2,818	1,955
125.24	2,482	577	125.77	2,825	1,983
125.25	2,488	602	125.78	2,831	2,011
125.26	2,494	627	125.79	2,838	2,040
125.27	2,501	652	125.80	2,844	2,068
125.28	2,507	677	125.81	2,851	2,097
125.29	2,514	702	125.82	2,857	2,125
125.30	2,520	727	125.83	2,864	2,154
125.31	2,527	752	125.84	2,870	2,182
125.32	2,533	777	125.85	2,877	2,211
125.33	2,540	803	125.86	2,883	2,240
125.34	2,546	828	125.87	2,890	2,269
125.35	2,553	854	125.88	2,896	2,298
125.36	2,559	879	125.89	2,903	2,327
125.37	2,566	905	125.90	2,909	2,356
125.38	2,572	931	125.91	2,916	2,385
125.39	2,579	956	125.92	2,922	2,414
125.40	2,585	982	125.93	2,929	2,443
125.41	2,592	1,008	125.94	2,935	2,473
125.42	2,598	1,034	125.95	2,942	2,502
125.43	2,605	1,060	125.96	2,948	2,532
125.44	2,611	1,086	125.97	2,955	2,561
125.45	2,618	1,112	125.98	2,961	2,591
125.46	2,624	1,139	125.99	2,968	2,620
125.47	2,631	1,165	126.00	2,974	2,650
125.48	2,637	1,191	126.01	2,984	2,680
125.49	2,644	1,218	126.02	2,995	2,710
125.50	2,650	1,244	126.03	3,005	2,740
125.51	2,656	1,271	126.04	3,015	2,770
125.52	2,663	1,297	126.05	3,025	2,800

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
126.06	3,036	2,830	126.59	3,579	4,583
126.07	3,046	2,861	126.60	3,590	4,619
126.08	3,056	2,891	126.61	3,600	4,655
126.09	3,066	2,922	126.62	3,610	4,691
126.10	3,077	2,953	126.63	3,620	4,727
126.11	3,087	2,983	126.64	3,631	4,763
126.12	3,097	3,014	126.65	3,641	4,800
126.13	3,107	3,045	126.66	3,651	4,836
126.14	3,118	3,076	126.67	3,661	4,873
126.15	3,128	3,108	126.68	3,672	4,910
126.16	3,138	3,139	126.69	3,682	4,946
126.17	3,148	3,170	126.70	3,692	4,983
126.18	3,159	3,202	126.71	3,702	5,020
126.19	3,169	3,234	126.72	3,713	5,057
126.20	3,179	3,265	126.73	3,723	5,094
126.21	3,189	3,297	126.74	3,733	5,132
126.22	3,200	3,329	126.75	3,744	5,169
126.23	3,210	3,361	126.76	3,754	5,207
126.24	3,220	3,393	126.77	3,764	5,244
126.25	3,231	3,426	126.78	3,774	5,282
126.26	3,241	3,458	126.79	3,785	5,320
126.27	3,251	3,490	126.80	3,795	5,358
126.28	3,261	3,523	126.81	3,805	5,396
126.29	3,272	3,556	126.82	3,815	5,434
126.30	3,282	3,588	126.83	3,826	5,472
126.31	3,292	3,621	126.84	3,836	5,510
126.32	3,302	3,654	126.85	3,846	5,549
126.33	3,313	3,687	126.86	3,856	5,587
126.34	3,323	3,720	126.87	3,867	5,626
126.35	3,333	3,754	126.88	3,877	5,664
126.36	3,343	3,787	126.89	3,887	5,703
126.37	3,354	3,821	126.90	3,897	5,742
126.38	3,364	3,854	126.91	3,908	5,781
126.39	3,374	3,888	126.92	3,918	5,820
126.40	3,384	3,922	126.93	3,928	5,860
126.41	3,395	3,956	126.94	3,938	5,899
126.42	3,405	3,990	126.95	3,949	5,938
126.43	3,415	4,024	126.96	3,959	5,978
126.44	3,425	4,058	126.97	3,969	6,017
126.45	3,436	4,092	126.98	3,979	6,057
126.46	3,446	4,127	126.99	3,990	6,097
126.47	3,456	4,161	127.00	4,000	6,137
126.48	3,466	4,196	127.01	4,008	6,177
126.49	3,477	4,230	127.02	4,016	6,217
126.50	3,487	4,265	127.03	4,023	6,257
126.51	3,497	4,300	127.04	4,031	6,298
126.52	3,508	4,335	127.05	4,039	6,338
126.53	3,518	4,370	127.06	4,047	6,378
126.54	3,528	4,406	127.07	4,055	6,419
126.55	3,538	4,441	127.08	4,062	6,459
126.56	3,549	4,476	127.09	4,070	6,500
126.57	3,559	4,512	127.10	4,078	6,541
126.58	3,569	4,547	127.11	4,086	6,582

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
127.12	4,094	6,623	127.65	4,507	8,902
127.13	4,101	6,664	127.66	4,515	8,947
127.14	4,109	6,705	127.67	4,523	8,992
127.15	4,117	6,746	127.68	4,530	9,037
127.16	4,125	6,787	127.69	4,538	9,083
127.17	4,133	6,828	127.70	4,546	9,128
127.18	4,140	6,870	127.71	4,554	9,174
127.19	4,148	6,911	127.72	4,562	9,219
127.20	4,156	6,953	127.73	4,569	9,265
127.21	4,164	6,994	127.74	4,577	9,311
127.22	4,172	7,036	127.75	4,585	9,356
127.23	4,179	7,078	127.76	4,593	9,402
127.24	4,187	7,119	127.77	4,601	9,448
127.25	4,195	7,161	127.78	4,608	9,494
127.26	4,203	7,203	127.79	4,616	9,540
127.27	4,211	7,245	127.80	4,624	9,587
127.28	4,218	7,288	127.81	4,632	9,633
127.29	4,226	7,330	127.82	4,640	9,679
127.30	4,234	7,372	127.83	4,647	9,726
127.31	4,242	7,414	127.84	4,655	9,772
127.32	4,250	7,457	127.85	4,663	9,819
127.33	4,257	7,499	127.86	4,671	9,865
127.34	4,265	7,542	127.87	4,679	9,912
127.35	4,273	7,585	127.88	4,686	9,959
127.36	4,281	7,628	127.89	4,694	10,006
127.37	4,289	7,670	127.90	4,702	10,053
127.38	4,296	7,713	127.91	4,710	10,100
127.39	4,304	7,756	127.92	4,718	10,147
127.40	4,312	7,799	127.93	4,725	10,194
127.41	4,320	7,843	127.94	4,733	10,242
127.42	4,328	7,886	127.95	4,741	10,289
127.43	4,335	7,929	127.96	4,749	10,336
127.44	4,343	7,973	127.97	4,757	10,384
127.45	4,351	8,016	127.98	4,764	10,432
127.46	4,359	8,060	127.99	4,772	10,479
127.47	4,367	8,103	128.00	**4,780**	**10,527**
127.48	4,374	8,147	128.01	4,780	10,527
127.49	4,382	8,191	128.02	4,780	10,527
127.50	4,390	8,235	128.03	4,780	10,527
127.51	4,398	8,278	128.04	4,780	10,527
127.52	4,406	8,322	128.05	4,780	10,527
127.53	4,413	8,367	128.06	4,780	10,527
127.54	4,421	8,411	128.07	4,780	10,527
127.55	4,429	8,455	128.08	4,780	10,527
127.56	4,437	8,499	128.09	4,780	10,527
127.57	4,445	8,544	128.10	4,780	10,527
127.58	4,452	8,588	128.11	4,780	10,527
127.59	4,460	8,633	128.12	4,780	10,527
127.60	4,468	8,677	128.13	4,780	10,527
127.61	4,476	8,722	128.14	4,780	10,527
127.62	4,484	8,767	128.15	4,780	10,527
127.63	4,491	8,812	128.16	4,780	10,527
127.64	4,499	8,857	128.17	4,780	10,527

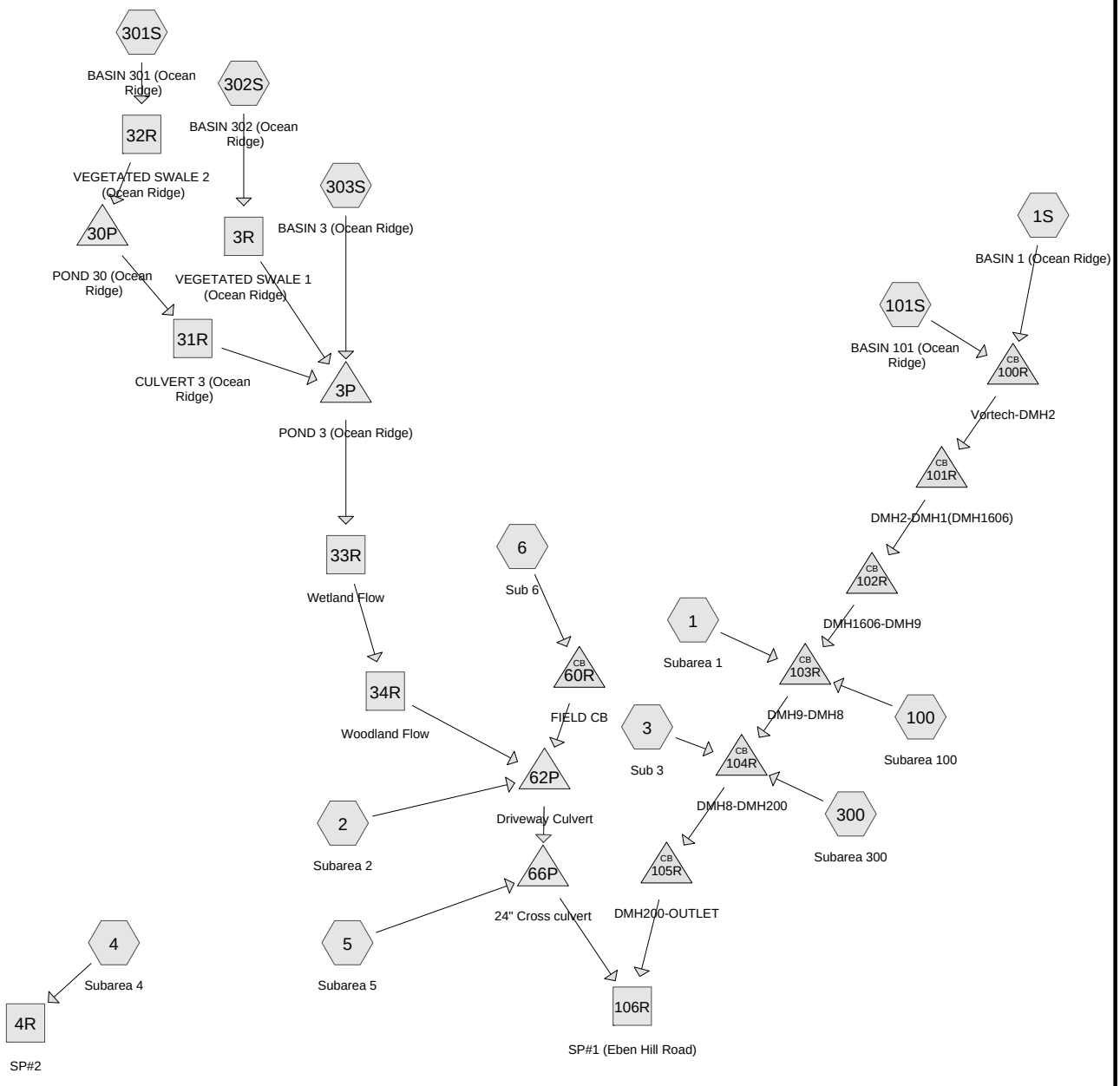
Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
128.18	4,780	10,527
128.19	4,780	10,527
128.20	4,780	10,527
128.21	4,780	10,527
128.22	4,780	10,527
128.23	4,780	10,527
128.24	4,780	10,527
128.25	4,780	10,527
128.26	4,780	10,527
128.27	4,780	10,527
128.28	4,780	10,527
128.29	4,780	10,527
128.30	4,780	10,527
128.31	4,780	10,527
128.32	4,780	10,527
128.33	4,780	10,527
128.34	4,780	10,527
128.35	4,780	10,527
128.36	4,780	10,527
128.37	4,780	10,527
128.38	4,780	10,527
128.39	4,780	10,527
128.40	4,780	10,527
128.41	4,780	10,527
128.42	4,780	10,527
128.43	4,780	10,527
128.44	4,780	10,527
128.45	4,780	10,527
128.46	4,780	10,527
128.47	4,780	10,527
128.48	4,780	10,527
128.49	4,780	10,527
128.50	4,780	10,527
128.51	4,780	10,527
128.52	4,780	10,527
128.53	4,780	10,527
128.54	4,780	10,527
128.55	4,780	10,527
128.56	4,780	10,527
128.57	4,780	10,527
128.58	4,780	10,527
128.59	4,780	10,527
128.60	4,780	10,527
128.61	4,780	10,527
128.62	4,780	10,527
128.63	4,780	10,527
128.64	4,780	10,527
128.65	4,780	10,527
128.66	4,780	10,527
128.67	4,780	10,527

Attachment B

HydroCAD Output- Pre-Development/Post Development TR-2- Model

Predevelopment



Routing Diagram for 14432_Predevelopment_ASBUIILT
Prepared by Sebago Technics, Printed 9/9/2015
HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.630	84	1 acre lots, 20% imp, HSG D (1, 3, 5, 6)
1.000	87	1/4 acre lots, 38% imp, HSG D (1, 2, 6)
0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge) (1)
0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge (2)
0.070	98	Building, Ocean Ridge (1, 2)
2.240	98	IMPERVIOUS (1S, 101S, 301S, 302S, 303S)
2.710	80	LAWN D (1S, 101S, 301S, 302S, 303S)
0.040	98	Paved roads Ocean Ave (3)
0.050	98	Road, Ocean Ridge (2)
0.610	98	Roadway (1, 2, 5, 100, 300)
0.510	77	WOODS D (1S, 302S, 303S)
15.100	77	Woods, Good, HSG D (1, 2, 4, 5)
0.030	77	Woods, Good, HSG D, Ocean Ridge (2)
24.220	**81**	**TOTAL AREA**

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1 Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=1.33"
Flow Length=660' Tc=9.5 min CN=80 Runoff=4.29 cfs 0.349 af

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=1.75"
Flow Length=660' Tc=9.9 min CN=86 Runoff=4.67 cfs 0.379 af

Subcatchment 2: Subarea 2 Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=1.20"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=8.62 cfs 1.155 af

Subcatchment 3: Sub 3 Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=1.75"
Flow Length=300' Tc=9.4 min CN=86 Runoff=0.55 cfs 0.044 af

Subcatchment 4: Subarea 4 Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=1.14"
Flow Length=250' Tc=9.8 min CN=77 Runoff=1.37 cfs 0.115 af

Subcatchment 5: Subarea 5 Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=1.33"
Flow Length=660' Tc=11.0 min CN=80 Runoff=2.36 cfs 0.201 af

Subcatchment 6: Sub 6 Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=1.60"
Flow Length=235' Tc=4.1 min CN=84 Runoff=0.84 cfs 0.056 af

Subcatchment 100: Subarea 100 Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=572' Tc=6.6 min CN=98 Runoff=0.65 cfs 0.053 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=2.08"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.45 cfs 0.033 af

Subcatchment 300: Subarea 300 Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=1.91"
Flow Length=190' Tc=9.3 min CN=88 Runoff=1.63 cfs 0.130 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=2.08"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=2.76 cfs 0.220 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=1.53"
Flow Length=150' Tc=8.1 min CN=83 Runoff=0.96 cfs 0.074 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.53' Max Vel=0.62 fps Inflow=2.76 cfs 0.220 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=2.49 cfs 0.220 af

Reach 4R: SP#2 Inflow=1.37 cfs 0.115 af
Outflow=1.37 cfs 0.115 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.40' Max Vel=4.38 fps Inflow=1.22 cfs 0.130 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=1.22 cfs 0.130 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.39' Max Vel=0.54 fps Inflow=1.63 cfs 0.130 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=1.53 cfs 0.130 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.15' Max Vel=0.61 fps Inflow=1.24 cfs 0.424 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=1.24 cfs 0.424 af

Reach 34R: Woodland Flow Avg. Flow Depth=0.10' Max Vel=2.01 fps Inflow=1.24 cfs 0.424 af
n=0.035 L=1,180.0' S=0.0581 '/' Capacity=108.87 cfs Outflow=1.23 cfs 0.424 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=17.08 cfs 2.714 af
Outflow=17.08 cfs 2.714 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=159.97' Storage=6,326 cf Inflow=4.17 cfs 0.424 af
Outflow=1.24 cfs 0.424 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.52' Storage=815 cf Inflow=1.53 cfs 0.130 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=1.22 cfs 0.130 af

Pond 60R: FIELD CB Peak Elev=90.47' Inflow=0.84 cfs 0.056 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=0.84 cfs 0.056 af

Pond 62P: Driveway Culvert Peak Elev=89.59' Storage=986 cf Inflow=9.36 cfs 1.634 af
Primary=7.78 cfs 1.604 af Secondary=1.56 cfs 0.030 af Outflow=9.33 cfs 1.634 af

Pond 66P: 24" Cross culvert Peak Elev=86.27' Storage=82 cf Inflow=10.30 cfs 1.835 af
Primary=10.29 cfs 1.835 af Secondary=0.00 cfs 0.000 af Outflow=10.29 cfs 1.835 af

Pond 100R: Vortech-DMH2 Peak Elev=108.12' Inflow=5.07 cfs 0.412 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=5.07 cfs 0.412 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=99.50' Inflow=5.07 cfs 0.412 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=5.07 cfs 0.412 af

Pond 102R: DMH1606-DMH9 Peak Elev=92.42' Inflow=5.07 cfs 0.412 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=5.07 cfs 0.412 af

Pond 103R: DMH9-DMH8 Peak Elev=91.19' Inflow=9.94 cfs 0.813 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=9.94 cfs 0.813 af

Pond 104R: DMH8-DMH200 Peak Elev=91.38' Inflow=10.70 cfs 0.879 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=10.70 cfs 0.879 af

Pond 105R: DMH200-OUTLET Peak Elev=88.86' Inflow=10.70 cfs 0.879 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=10.70 cfs 0.879 af

Total Runoff Area = 24.220 ac Runoff Volume = 2.829 af Average Runoff Depth = 1.40"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 4.29 cfs @ 12.14 hrs, Volume= 0.349 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.290	84	1 acre lots, 20% imp, HSG D
	0.290	87	1/4 acre lots, 38% imp, HSG D
*	0.220	98	Roadway
	2.240	77	Woods, Good, HSG D
*	0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
*	0.030	98	Building, Ocean Ridge
	3.160	80	Weighted Average
	2.742		86.77% Pervious Area
	0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		**Shallow Concentrated Flow, Shallow Rd Ditch**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 4.67 cfs @ 12.14 hrs, Volume= 0.379 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.900	98	IMPERVIOUS
*	0.380	77	WOODS D
*	1.320	80	LAWN D
	2.600	86	Weighted Average
	1.700		65.38% Pervious Area
	0.900		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 8.62 cfs @ 12.46 hrs, Volume= 1.155 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.640	87	1/4 acre lots, 38% imp, HSG D
*	0.050	98	Roadway
	10.590	77	Woods, Good, HSG D
*	0.040	98	Building, Ocean Ridge
*	0.050	98	Road, Ocean Ridge
*	0.030	77	Woods, Good, HSG D, Ocean Ridge
*	0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
	11.540	78	Weighted Average
	11.157		96.68% Pervious Area
	0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.55 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.040	98	Paved roads Ocean Ave
	0.260	84	1 acre lots, 20% imp, HSG D
	0.300	86	Weighted Average
	0.208		69.33% Pervious Area
	0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 2.36 cfs @ 12.16 hrs, Volume= 0.201 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.730	84	1 acre lots, 20% imp, HSG D
*	0.030	98	Roadway
	1.060	77	Woods, Good, HSG D
	1.820	80	Weighted Average
	1.644		90.33% Pervious Area
	0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 0.84 cfs @ 12.06 hrs, Volume= 0.056 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035 Earth, dense weeds
4.1	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.220	98	Roadway
	0.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.110	98	IMPERVIOUS
*	0.080	80	LAWN D
	0.190	90	Weighted Average
	0.080		42.11% Pervious Area
	0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn**
					Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway**
					Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope**
					Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.090	98	Roadway
	0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow**
					Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.370	98	IMPERVIOUS
*	0.450	80	LAWN D
	0.820	88	Weighted Average
	0.450		54.88% Pervious Area
	0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD**
					Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.740	98	IMPERVIOUS
*	0.050	77	WOODS D
*	0.480	80	LAWN D
	1.270	90	Weighted Average
	0.530		41.73% Pervious Area
	0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC**
					Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:**
					Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 0.96 cfs @ 12.12 hrs, Volume= 0.074 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.120	98	IMPERVIOUS
*	0.080	77	WOODS D
*	0.380	80	LAWN D
	0.580	83	Weighted Average
	0.460		79.31% Pervious Area
	0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 2.08" for Cumberland_02 event
Inflow = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af
Outflow = 2.49 cfs @ 12.25 hrs, Volume= 0.220 af, Atten= 10%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.62 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 17.1 min

Peak Storage= 685 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 1.14" for Cumberland_02 event
Inflow = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af
Outflow = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

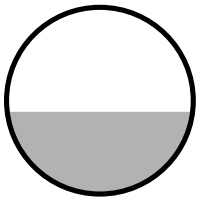
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af
Outflow = 1.22 cfs @ 12.33 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.38 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af
Outflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af, Atten= 6%, Lag= 5.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 12.7 min

Peak Storage= 325 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af
Outflow = 1.24 cfs @ 12.87 hrs, Volume= 0.424 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 14.9 min

Peak Storage= 303 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.87 hrs, Volume= 0.424 af
Outflow = 1.23 cfs @ 13.19 hrs, Volume= 0.424 af, Atten= 1%, Lag= 18.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.01 fps, Min. Travel Time= 9.8 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 30.6 min

Peak Storage= 722 cf @ 13.02 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 1,180.0' Slope= 0.0581 '/'
Inlet Invert= 157.50', Outlet Invert= 89.00'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 1.42" for Cumberland_02 event
Inflow = 17.08 cfs @ 12.15 hrs, Volume= 2.714 af
Outflow = 17.08 cfs @ 12.15 hrs, Volume= 2.714 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 4.17 cfs @ 12.26 hrs, Volume= 0.424 af
Outflow = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af, Atten= 70%, Lag= 29.7 min
Primary = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 159.97' @ 12.75 hrs Surf.Area= 4,273 sf Storage= 6,326 cf

Plug-Flow detention time= 81.6 min calculated for 0.424 af (100% of inflow)
Center-of-Mass det. time= 81.6 min (921.2 - 839.7)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=1.24 cfs @ 12.75 hrs HW=159.97' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.24 cfs @ 6.32 fps)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af
Outflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af, Atten= 20%, Lag= 5.7 min
Primary = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 160.52' @ 12.32 hrs Surf.Area= 1,371 sf Storage= 815 cf

Plug-Flow detention time= 33.6 min calculated for 0.130 af (100% of inflow)
Center-of-Mass det. time= 33.5 min (864.4 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500
			Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.22 cfs @ 12.32 hrs HW=160.52' (Free Discharge)
- **1=Culvert** (Barrel Controls 1.22 cfs @ 3.38 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 1.60" for Cumberland_02 event
Inflow = 0.84 cfs @ 12.06 hrs, Volume= 0.056 af
Outflow = 0.84 cfs @ 12.06 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.06 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 90.47' @ 12.06 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.84 cfs @ 12.06 hrs HW=90.47' (Free Discharge)
1=Culvert (Inlet Controls 0.84 cfs @ 2.33 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 1.34" for Cumberland_02 event
Inflow = 9.36 cfs @ 12.49 hrs, Volume= 1.634 af
Outflow = 9.33 cfs @ 12.51 hrs, Volume= 1.634 af, Atten= 0%, Lag= 1.4 min
Primary = 7.78 cfs @ 12.51 hrs, Volume= 1.604 af
Secondary = 1.56 cfs @ 12.51 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 89.59' @ 12.51 hrs Surf.Area= 2,134 sf Storage= 986 cf

Plug-Flow detention time= 0.6 min calculated for 1.634 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (895.3 - 894.8)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=7.78 cfs @ 12.51 hrs HW=89.59' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.78 cfs @ 4.40 fps)

Secondary OutFlow Max=1.55 cfs @ 12.51 hrs HW=89.59' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.55 cfs @ 0.78 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 1.34" for Cumberland_02 event
Inflow = 10.30 cfs @ 12.49 hrs, Volume= 1.835 af
Outflow = 10.29 cfs @ 12.49 hrs, Volume= 1.835 af, Atten= 0%, Lag= 0.3 min
Primary = 10.29 cfs @ 12.49 hrs, Volume= 1.835 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 86.27' @ 12.49 hrs Surf.Area= 129 sf Storage= 82 cf

Plug-Flow detention time= 0.3 min calculated for 1.835 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (890.4 - 890.3)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=10.29 cfs @ 12.49 hrs HW=86.27' (Free Discharge)
└**1=Culvert** (Barrel Controls 10.29 cfs @ 4.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 108.12' @ 12.13 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=108.12' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 99.50' @ 12.13 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=99.50' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 92.42' @ 12.13 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=92.42' (Free Discharge)
1=Culvert (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 1.58" for Cumberland_02 event
Inflow = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af
Outflow = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af, Atten= 0%, Lag= 0.0 min
Primary = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 91.19' @ 12.13 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=9.93 cfs @ 12.13 hrs HW=91.18' (Free Discharge)
1=Culvert (Inlet Controls 9.93 cfs @ 5.62 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 1.61" for Cumberland_02 event
Inflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af
Outflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min
Primary = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 91.38' @ 12.13 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.70 cfs @ 12.13 hrs HW=91.37' (Free Discharge)
1=Culvert (Barrel Controls 10.70 cfs @ 6.05 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 1.61" for Cumberland_02 event
Inflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af
Outflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min
Primary = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 88.86' @ 12.13 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=10.70 cfs @ 12.13 hrs HW=88.86' (Free Discharge)
1=Culvert (Inlet Controls 10.70 cfs @ 6.05 fps)

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1 Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=2.55"
Flow Length=660' Tc=9.5 min CN=80 Runoff=8.38 cfs 0.671 af

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=3.10"
Flow Length=660' Tc=9.9 min CN=86 Runoff=8.20 cfs 0.671 af

Subcatchment 2: Subarea 2 Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=2.38"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=17.52 cfs 2.285 af

Subcatchment 3: Sub 3 Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=3.10"
Flow Length=300' Tc=9.4 min CN=86 Runoff=0.96 cfs 0.077 af

Subcatchment 4: Subarea 4 Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=2.29"
Flow Length=250' Tc=9.8 min CN=77 Runoff=2.85 cfs 0.231 af

Subcatchment 5: Subarea 5 Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=2.55"
Flow Length=660' Tc=11.0 min CN=80 Runoff=4.60 cfs 0.386 af

Subcatchment 6: Sub 6 Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=2.91"
Flow Length=235' Tc=4.1 min CN=84 Runoff=1.53 cfs 0.102 af

Subcatchment 100: Subarea 100 Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=572' Tc=6.6 min CN=98 Runoff=0.97 cfs 0.080 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=3.49"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.74 cfs 0.055 af

Subcatchment 300: Subarea 300 Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.42 cfs 0.033 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=3.29"
Flow Length=190' Tc=9.3 min CN=88 Runoff=2.78 cfs 0.225 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=3.49"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=4.55 cfs 0.370 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=2.81"
Flow Length=150' Tc=8.1 min CN=83 Runoff=1.78 cfs 0.136 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.71' Max Vel=0.73 fps Inflow=4.55 cfs 0.370 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=4.19 cfs 0.370 af

Reach 4R: SP#2 Inflow=2.85 cfs 0.231 af
Outflow=2.85 cfs 0.231 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.58' Max Vel=5.06 fps Inflow=2.22 cfs 0.225 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=2.22 cfs 0.225 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.54' Max Vel=0.65 fps Inflow=2.78 cfs 0.225 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=2.64 cfs 0.225 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.24' Max Vel=0.78 fps Inflow=2.79 cfs 0.730 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=2.78 cfs 0.730 af

Reach 34R: Woodland Flow Avg. Flow Depth=0.16' Max Vel=2.60 fps Inflow=2.78 cfs 0.730 af
n=0.035 L=1,180.0' S=0.0581 '/' Capacity=108.87 cfs Outflow=2.72 cfs 0.730 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=31.51 cfs 5.090 af
Outflow=31.51 cfs 5.090 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=160.74' Storage=10,521 cf Inflow=7.37 cfs 0.730 af
Outflow=2.79 cfs 0.730 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.73' Storage=1,151 cf Inflow=2.64 cfs 0.225 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=2.22 cfs 0.225 af

Pond 60R: FIELD CB Peak Elev=90.66' Inflow=1.53 cfs 0.102 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=1.53 cfs 0.102 af

Pond 62P: Driveway Culvert Peak Elev=89.82' Storage=1,576 cf Inflow=18.90 cfs 3.117 af
Primary=8.42 cfs 2.615 af Secondary=10.43 cfs 0.502 af Outflow=18.85 cfs 3.117 af

Pond 66P: 24" Cross culvert Peak Elev=88.29' Storage=1,462 cf Inflow=20.77 cfs 3.503 af
Primary=20.13 cfs 3.503 af Secondary=0.00 cfs 0.000 af Outflow=20.13 cfs 3.503 af

Pond 100R: Vortech-DMH2 Peak Elev=108.83' Inflow=8.86 cfs 0.726 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=8.86 cfs 0.726 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=100.21' Inflow=8.86 cfs 0.726 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=8.86 cfs 0.726 af

Pond 102R: DMH1606-DMH9 Peak Elev=93.13' Inflow=8.86 cfs 0.726 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=8.86 cfs 0.726 af

Pond 103R: DMH9-DMH8 Peak Elev=95.06' Inflow=18.11 cfs 1.477 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=18.11 cfs 1.477 af

Pond 104R: DMH8-DMH200 Peak Elev=98.87' Inflow=19.40 cfs 1.587 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=19.40 cfs 1.587 af

Pond 105R: DMH200-OUTLET Peak Elev=92.48' Inflow=19.40 cfs 1.587 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=19.40 cfs 1.587 af

Total Runoff Area = 24.220 ac Runoff Volume = 5.321 af Average Runoff Depth = 2.64"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 8.38 cfs @ 12.13 hrs, Volume= 0.671 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.290	84	1 acre lots, 20% imp, HSG D
	0.290	87	1/4 acre lots, 38% imp, HSG D
*	0.220	98	Roadway
	2.240	77	Woods, Good, HSG D
*	0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
*	0.030	98	Building, Ocean Ridge
	3.160	80	Weighted Average
	2.742		86.77% Pervious Area
	0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		**Shallow Concentrated Flow, Shallow Rd Ditch**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 8.20 cfs @ 12.14 hrs, Volume= 0.671 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.900	98	IMPERVIOUS
*	0.380	77	WOODS D
*	1.320	80	LAWN D
	2.600	86	Weighted Average
	1.700		65.38% Pervious Area
	0.900		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 17.52 cfs @ 12.46 hrs, Volume= 2.285 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.640	87	1/4 acre lots, 38% imp, HSG D
*	0.050	98	Roadway
	10.590	77	Woods, Good, HSG D
*	0.040	98	Building, Ocean Ridge
*	0.050	98	Road, Ocean Ridge
*	0.030	77	Woods, Good, HSG D, Ocean Ridge
*	0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
	11.540	78	Weighted Average
	11.157		96.68% Pervious Area
	0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 0.077 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.040	98	Paved roads Ocean Ave
	0.260	84	1 acre lots, 20% imp, HSG D
	0.300	86	Weighted Average
	0.208		69.33% Pervious Area
	0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 4.60 cfs @ 12.15 hrs, Volume= 0.386 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.730	84	1 acre lots, 20% imp, HSG D
*	0.030	98	Roadway
	1.060	77	Woods, Good, HSG D
	1.820	80	Weighted Average
	1.644		90.33% Pervious Area
	0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 1.53 cfs @ 12.06 hrs, Volume= 0.102 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035 Earth, dense weeds
4.1	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.220	98	Roadway
	0.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.110	98	IMPERVIOUS
*	0.080	80	LAWN D
	0.190	90	Weighted Average
	0.080		42.11% Pervious Area
	0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn**
					Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway**
					Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope**
					Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.033 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.090	98	Roadway
	0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow**
					Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.370	98	IMPERVIOUS
*	0.450	80	LAWN D
	0.820	88	Weighted Average
	0.450		54.88% Pervious Area
	0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD**
					Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.740	98	IMPERVIOUS
*	0.050	77	WOODS D
*	0.480	80	LAWN D
	1.270	90	Weighted Average
	0.530		41.73% Pervious Area
	0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC**
					Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:**
					Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 1.78 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.120	98	IMPERVIOUS
*	0.080	77	WOODS D
*	0.380	80	LAWN D
	0.580	83	Weighted Average
	0.460		79.31% Pervious Area
	0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 3.49" for Cumberland_10 event
Inflow = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af
Outflow = 4.19 cfs @ 12.23 hrs, Volume= 0.370 af, Atten= 8%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.73 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 14.8 min

Peak Storage= 979 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 2.29" for Cumberland_10 event
Inflow = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af
Outflow = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

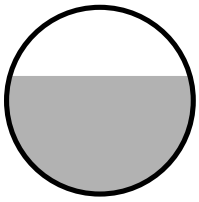
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af
Outflow = 2.22 cfs @ 12.29 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.06 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 0.7 min

Peak Storage= 22 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af
Outflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af, Atten= 5%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.65 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 11.0 min

Peak Storage= 470 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
Inflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af
Outflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af, Atten= 0%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 13.5 min

Peak Storage= 532 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
Inflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af
Outflow = 2.72 cfs @ 12.95 hrs, Volume= 0.730 af, Atten= 2%, Lag= 14.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 7.6 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 27.8 min

Peak Storage= 1,236 cf @ 12.82 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 1,180.0' Slope= 0.0581 '/'
Inlet Invert= 157.50', Outlet Invert= 89.00'



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Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 2.65" for Cumberland_10 event
Inflow = 31.51 cfs @ 12.16 hrs, Volume= 5.090 af
Outflow = 31.51 cfs @ 12.16 hrs, Volume= 5.090 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
Inflow = 7.37 cfs @ 12.24 hrs, Volume= 0.730 af
Outflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af, Atten= 62%, Lag= 22.9 min
Primary = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 160.74' @ 12.62 hrs Surf.Area= 5,209 sf Storage= 10,521 cf

Plug-Flow detention time= 75.9 min calculated for 0.730 af (100% of inflow)
Center-of-Mass det. time= 76.0 min (896.4 - 820.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=2.79 cfs @ 12.62 hrs HW=160.74' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.49 cfs @ 7.60 fps)
- **2=Orifice/Grate** (Orifice Controls 1.29 cfs @ 2.94 fps)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af
Outflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af, Atten= 16%, Lag= 4.5 min
Primary = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 160.73' @ 12.28 hrs Surf.Area= 1,462 sf Storage= 1,151 cf

Plug-Flow detention time= 25.9 min calculated for 0.225 af (100% of inflow)
Center-of-Mass det. time= 26.0 min (839.7 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500
			Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.22 cfs @ 12.28 hrs HW=160.73' (Free Discharge)
- **1=Culvert** (Barrel Controls 2.22 cfs @ 3.82 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 2.91" for Cumberland_10 event
Inflow = 1.53 cfs @ 12.06 hrs, Volume= 0.102 af
Outflow = 1.53 cfs @ 12.06 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.53 cfs @ 12.06 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 90.66' @ 12.06 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.52 cfs @ 12.06 hrs HW=90.66' (Free Discharge)
1=Culvert (Inlet Controls 1.52 cfs @ 2.77 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 2.56" for Cumberland_10 event
Inflow = 18.90 cfs @ 12.46 hrs, Volume= 3.117 af
Outflow = 18.85 cfs @ 12.48 hrs, Volume= 3.117 af, Atten= 0%, Lag= 1.0 min
Primary = 8.42 cfs @ 12.48 hrs, Volume= 2.615 af
Secondary = 10.43 cfs @ 12.48 hrs, Volume= 0.502 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 89.82' @ 12.48 hrs Surf.Area= 3,038 sf Storage= 1,576 cf

Plug-Flow detention time= 0.8 min calculated for 3.116 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (871.1 - 870.3)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.42 cfs @ 12.48 hrs HW=89.82' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.42 cfs @ 4.76 fps)

Secondary OutFlow Max=10.43 cfs @ 12.48 hrs HW=89.82' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 10.43 cfs @ 1.48 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 2.56" for Cumberland_10 event
Inflow = 20.77 cfs @ 12.46 hrs, Volume= 3.503 af
Outflow = 20.13 cfs @ 12.54 hrs, Volume= 3.503 af, Atten= 3%, Lag= 4.7 min
Primary = 20.13 cfs @ 12.54 hrs, Volume= 3.503 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 88.29' @ 12.54 hrs Surf.Area= 1,567 sf Storage= 1,462 cf

Plug-Flow detention time= 0.5 min calculated for 3.503 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (866.9 - 866.5)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=20.13 cfs @ 12.54 hrs HW=88.29' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.13 cfs @ 6.41 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 108.83' @ 12.13 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=108.83' (Free Discharge)
↑**1=Culvert** (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 100.21' @ 12.13 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=100.21' (Free Discharge)
↑**1=Culvert** (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 93.13' @ 12.13 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=93.13' (Free Discharge)
1=Culvert (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 2.87" for Cumberland_10 event
Inflow = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af
Outflow = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af, Atten= 0%, Lag= 0.0 min
Primary = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 95.06' @ 12.13 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=18.11 cfs @ 12.13 hrs HW=95.06' (Free Discharge)
1=Culvert (Barrel Controls 18.11 cfs @ 10.25 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 2.90" for Cumberland_10 event
Inflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af
Outflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af, Atten= 0%, Lag= 0.0 min
Primary = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 98.87' @ 12.13 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=19.39 cfs @ 12.13 hrs HW=98.86' (Free Discharge)
1=Culvert (Barrel Controls 19.39 cfs @ 10.97 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 2.90" for Cumberland_10 event
Inflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af
Outflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af, Atten= 0%, Lag= 0.0 min
Primary = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 92.48' @ 12.13 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=19.39 cfs @ 12.13 hrs HW=92.47' (Free Discharge)
1=Culvert (Inlet Controls 19.39 cfs @ 10.97 fps)

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1 Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=3.60"
Flow Length=660' Tc=9.5 min CN=80 Runoff=11.82 cfs 0.948 af

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=4.22"
Flow Length=660' Tc=9.9 min CN=86 Runoff=11.06 cfs 0.914 af

Subcatchment 2: Subarea 2 Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=3.40"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=25.13 cfs 3.272 af

Subcatchment 3: Sub 3 Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=4.22"
Flow Length=300' Tc=9.4 min CN=86 Runoff=1.30 cfs 0.105 af

Subcatchment 4: Subarea 4 Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=3.31"
Flow Length=250' Tc=9.8 min CN=77 Runoff=4.12 cfs 0.333 af

Subcatchment 5: Subarea 5 Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=3.60"
Flow Length=660' Tc=11.0 min CN=80 Runoff=6.49 cfs 0.546 af

Subcatchment 6: Sub 6 Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=4.01"
Flow Length=235' Tc=4.1 min CN=84 Runoff=2.09 cfs 0.140 af

Subcatchment 100: Subarea 100 Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=572' Tc=6.6 min CN=98 Runoff=1.23 cfs 0.102 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=4.65"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.98 cfs 0.074 af

Subcatchment 300: Subarea 300 Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.53 cfs 0.042 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=4.43"
Flow Length=190' Tc=9.3 min CN=88 Runoff=3.69 cfs 0.303 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=4.65"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=5.97 cfs 0.492 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=3.91"
Flow Length=150' Tc=8.1 min CN=83 Runoff=2.45 cfs 0.189 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.83' Max Vel=0.79 fps Inflow=5.97 cfs 0.492 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=5.56 cfs 0.492 af

Reach 4R: SP#2 Inflow=4.12 cfs 0.333 af
Outflow=4.12 cfs 0.333 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.75' Max Vel=5.29 fps Inflow=3.04 cfs 0.303 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=3.04 cfs 0.303 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.63' Max Vel=0.71 fps Inflow=3.69 cfs 0.303 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=3.54 cfs 0.303 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.29' Max Vel=0.87 fps Inflow=3.95 cfs 0.984 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=3.93 cfs 0.984 af

Reach 34R: Woodland Flow Avg. Flow Depth=0.19' Max Vel=2.90 fps Inflow=3.93 cfs 0.984 af
n=0.035 L=1,180.0' S=0.0581 '/' Capacity=108.87 cfs Outflow=3.87 cfs 0.984 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=44.16 cfs 6.887 af
Outflow=44.16 cfs 6.887 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=161.33' Storage=13,782 cf Inflow=9.99 cfs 0.984 af
Outflow=3.95 cfs 0.984 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.88' Storage=1,387 cf Inflow=3.54 cfs 0.303 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=3.04 cfs 0.303 af

Pond 60R: FIELD CB Peak Elev=90.81' Inflow=2.09 cfs 0.140 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=2.09 cfs 0.140 af

Pond 62P: Driveway Culvert Peak Elev=89.96' Storage=2,063 cf Inflow=27.39 cfs 4.397 af
Primary=8.80 cfs 3.332 af Secondary=18.54 cfs 1.065 af Outflow=27.33 cfs 4.397 af

Pond 66P: 24" Cross culvert Peak Elev=88.82' Storage=1,817 cf Inflow=29.90 cfs 4.943 af
Primary=21.93 cfs 4.701 af Secondary=5.72 cfs 0.146 af Outflow=27.65 cfs 4.847 af

Pond 100R: Vortech-DMH2 Peak Elev=109.71' Inflow=11.92 cfs 0.988 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=11.92 cfs 0.988 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=101.09' Inflow=11.92 cfs 0.988 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=11.92 cfs 0.988 af

Pond 102R: DMH1606-DMH9 Peak Elev=94.01' Inflow=11.92 cfs 0.988 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=11.92 cfs 0.988 af

Pond 103R: DMH9-DMH8 Peak Elev=100.19' Inflow=24.85 cfs 2.038 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=24.85 cfs 2.038 af

Pond 104R: DMH8-DMH200 Peak Elev=108.29' Inflow=26.56 cfs 2.185 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=26.56 cfs 2.185 af

Pond 105R: DMH200-OUTLET Peak Elev=97.03' Inflow=26.56 cfs 2.185 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=26.56 cfs 2.185 af

Total Runoff Area = 24.220 ac Runoff Volume = 7.462 af Average Runoff Depth = 3.70"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 11.82 cfs @ 12.13 hrs, Volume= 0.948 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.290	84	1 acre lots, 20% imp, HSG D
	0.290	87	1/4 acre lots, 38% imp, HSG D
*	0.220	98	Roadway
	2.240	77	Woods, Good, HSG D
*	0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
*	0.030	98	Building, Ocean Ridge
	3.160	80	Weighted Average
	2.742		86.77% Pervious Area
	0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		**Shallow Concentrated Flow, Shallow Rd Ditch**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 11.06 cfs @ 12.13 hrs, Volume= 0.914 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.900	98	IMPERVIOUS
*	0.380	77	WOODS D
*	1.320	80	LAWN D
	2.600	86	Weighted Average
	1.700		65.38% Pervious Area
	0.900		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 25.13 cfs @ 12.46 hrs, Volume= 3.272 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.640	87	1/4 acre lots, 38% imp, HSG D
*	0.050	98	Roadway
	10.590	77	Woods, Good, HSG D
*	0.040	98	Building, Ocean Ridge
*	0.050	98	Road, Ocean Ridge
*	0.030	77	Woods, Good, HSG D, Ocean Ridge
*	0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
	11.540	78	Weighted Average
	11.157		96.68% Pervious Area
	0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 1.30 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.040	98	Paved roads Ocean Ave
	0.260	84	1 acre lots, 20% imp, HSG D
	0.300	86	Weighted Average
	0.208		69.33% Pervious Area
	0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 6.49 cfs @ 12.15 hrs, Volume= 0.546 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.730	84	1 acre lots, 20% imp, HSG D
*	0.030	98	Roadway
	1.060	77	Woods, Good, HSG D
	1.820	80	Weighted Average
	1.644		90.33% Pervious Area
	0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 2.09 cfs @ 12.06 hrs, Volume= 0.140 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035 Earth, dense weeds
4.1	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.220	98	Roadway
	0.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.110	98	IMPERVIOUS
*	0.080	80	LAWN D
	0.190	90	Weighted Average
	0.080		42.11% Pervious Area
	0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn**
					Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway**
					Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope**
					Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.090	98	Roadway
	0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow**
					Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.370	98	IMPERVIOUS
*	0.450	80	LAWN D
	0.820	88	Weighted Average
	0.450		54.88% Pervious Area
	0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD**
					Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.740	98	IMPERVIOUS
*	0.050	77	WOODS D
*	0.480	80	LAWN D
	1.270	90	Weighted Average
	0.530		41.73% Pervious Area
	0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC**
					Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:**
					Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 2.45 cfs @ 12.11 hrs, Volume= 0.189 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.120	98	IMPERVIOUS
*	0.080	77	WOODS D
*	0.380	80	LAWN D
	0.580	83	Weighted Average
	0.460		79.31% Pervious Area
	0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 4.65" for Cumberland_25 event
Inflow = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af
Outflow = 5.56 cfs @ 12.22 hrs, Volume= 0.492 af, Atten= 7%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.79 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 13.6 min

Peak Storage= 1,192 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 3.31" for Cumberland_25 event
Inflow = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af
Outflow = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

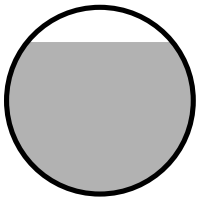
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af
Outflow = 3.04 cfs @ 12.28 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.7 min

Peak Storage= 29 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af
Outflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af, Atten= 4%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.71 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 10.1 min

Peak Storage= 574 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
Inflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af
Outflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af, Atten= 0%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 12.7 min

Peak Storage= 680 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
Inflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af
Outflow = 3.87 cfs @ 12.87 hrs, Volume= 0.984 af, Atten= 2%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.90 fps, Min. Travel Time= 6.8 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 26.3 min

Peak Storage= 1,576 cf @ 12.76 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 1,180.0' Slope= 0.0581 '/'
Inlet Invert= 157.50', Outlet Invert= 89.00'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 3.59" for Cumberland_25 event
Inflow = 44.16 cfs @ 12.14 hrs, Volume= 6.887 af
Outflow = 44.16 cfs @ 12.14 hrs, Volume= 6.887 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
Inflow = 9.99 cfs @ 12.22 hrs, Volume= 0.984 af
Outflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af, Atten= 60%, Lag= 21.4 min
Primary = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 161.33' @ 12.58 hrs Surf.Area= 5,928 sf Storage= 13,782 cf

Plug-Flow detention time= 71.5 min calculated for 0.984 af (100% of inflow)
Center-of-Mass det. time= 71.5 min (881.9 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=3.95 cfs @ 12.58 hrs HW=161.33' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.66 cfs @ 8.46 fps)
- **2=Orifice/Grate** (Orifice Controls 2.08 cfs @ 4.71 fps)
- **3=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.97 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af
Outflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af, Atten= 14%, Lag= 4.1 min
Primary = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 160.88' @ 12.27 hrs Surf.Area= 1,526 sf Storage= 1,387 cf

Plug-Flow detention time= 22.7 min calculated for 0.303 af (100% of inflow)
Center-of-Mass det. time= 22.8 min (827.3 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500
			Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.04 cfs @ 12.27 hrs HW=160.88' (Free Discharge)
- **1=Culvert** (Barrel Controls 3.04 cfs @ 4.07 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 4.01" for Cumberland_25 event
Inflow = 2.09 cfs @ 12.06 hrs, Volume= 0.140 af
Outflow = 2.09 cfs @ 12.06 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 2.09 cfs @ 12.06 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 90.81' @ 12.06 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.09 cfs @ 12.06 hrs HW=90.81' (Free Discharge)
1=Culvert (Inlet Controls 2.09 cfs @ 3.06 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 3.61" for Cumberland_25 event
Inflow = 27.39 cfs @ 12.46 hrs, Volume= 4.397 af
Outflow = 27.33 cfs @ 12.49 hrs, Volume= 4.397 af, Atten= 0%, Lag= 1.5 min
Primary = 8.80 cfs @ 12.49 hrs, Volume= 3.332 af
Secondary = 18.54 cfs @ 12.49 hrs, Volume= 1.065 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 89.96' @ 12.49 hrs Surf.Area= 3,691 sf Storage= 2,063 cf

Plug-Flow detention time= 0.9 min calculated for 4.397 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (858.6 - 857.8)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.80 cfs @ 12.49 hrs HW=89.96' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.80 cfs @ 4.98 fps)

Secondary OutFlow Max=18.53 cfs @ 12.49 hrs HW=89.96' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 18.53 cfs @ 1.81 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 3.61" for Cumberland_25 event
Inflow = 29.90 cfs @ 12.46 hrs, Volume= 4.943 af
Outflow = 27.65 cfs @ 12.46 hrs, Volume= 4.847 af, Atten= 8%, Lag= 0.0 min
Primary = 21.93 cfs @ 12.46 hrs, Volume= 4.701 af
Secondary = 5.72 cfs @ 12.46 hrs, Volume= 0.146 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 88.82' @ 12.46 hrs Surf.Area= 1,850 sf Storage= 1,817 cf

Plug-Flow detention time= 15.5 min calculated for 4.847 af (98% of inflow)
Center-of-Mass det. time= 2.5 min (856.9 - 854.4)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=21.93 cfs @ 12.46 hrs HW=88.82' (Free Discharge)
└**1=Culvert** (Inlet Controls 21.93 cfs @ 6.98 fps)

Secondary OutFlow Max=5.71 cfs @ 12.46 hrs HW=88.82' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 5.71 cfs @ 1.48 fps)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 109.71' @ 12.13 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=109.71' (Free Discharge)
1=Culvert (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 101.09' @ 12.13 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=101.09' (Free Discharge)
1=Culvert (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 94.01' @ 12.13 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=94.01' (Free Discharge)
1=Culvert (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 3.96" for Cumberland_25 event
Inflow = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af
Outflow = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af, Atten= 0%, Lag= 0.0 min
Primary = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 100.19' @ 12.13 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=24.85 cfs @ 12.13 hrs HW=100.18' (Free Discharge)
1=Culvert (Barrel Controls 24.85 cfs @ 14.06 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 4.00" for Cumberland_25 event
Inflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af
Outflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af, Atten= 0%, Lag= 0.0 min
Primary = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 108.29' @ 12.13 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=26.54 cfs @ 12.13 hrs HW=108.26' (Free Discharge)
1=Culvert (Barrel Controls 26.54 cfs @ 15.02 fps)

Summary for Pond 105R: DMH200-OUTLET

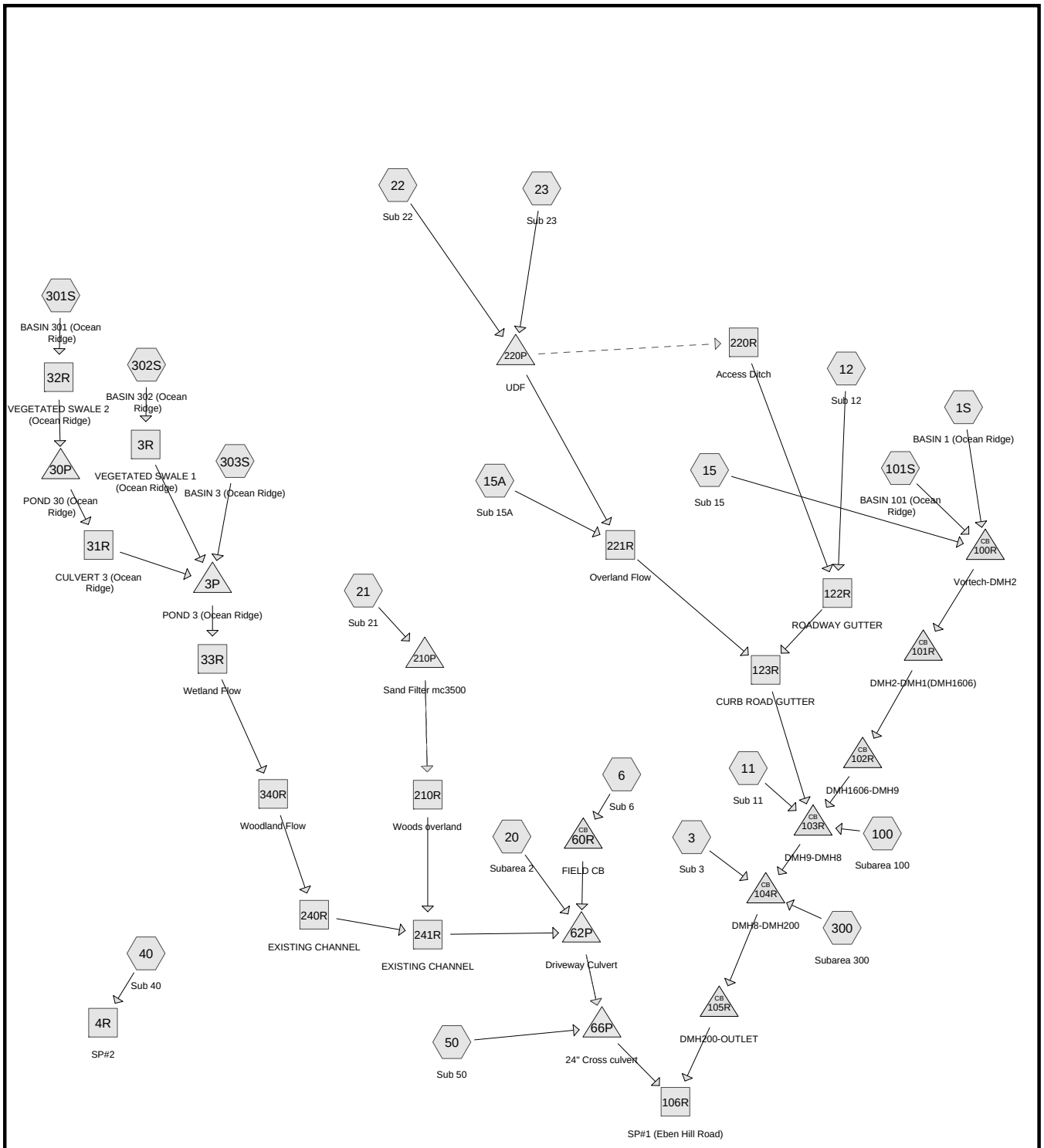
Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 4.00" for Cumberland_25 event
Inflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af
Outflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af, Atten= 0%, Lag= 0.0 min
Primary = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 97.03' @ 12.13 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=26.54 cfs @ 12.13 hrs HW=97.01' (Free Discharge)
1=Culvert (Inlet Controls 26.54 cfs @ 15.02 fps)

Postdevelopment



Routing Diagram for 14432_Postdevelopment_AS BUILT_rev09-15
Prepared by Sebago Technics, Printed 9/9/2015
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.63	84	1 acre lots, 20% imp, HSG D (3, 6, 11, 50)
1.00	87	1/4 acre lots, 38% imp, HSG D (6, 11, 20)
2.18	80	>75% Grass cover, Good, HSG D (11, 12, 15, 15A, 20, 21, 22, 23, 50)
0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge (12)
2.24	98	IMPERVIOUS (1S, 101S, 301S, 302S, 303S)
2.71	80	LAWN D (1S, 101S, 301S, 302S, 303S)
0.04	98	Paved roads OCEAN AVE (12)
0.26	98	Paved roads Ocean Ave (3, 11, 50)
0.05	98	Paved roads Ocean Ridge (12)
0.24	98	Paved roads Site Drive (15, 15A)
0.05	98	Paved roads, Site Drive (11)
0.31	98	Roadway (100, 300)
0.05	98	Roadway, Ocean Ave (20)
0.07	98	Roofs, OCEAN RIDGE (12)
2.56	98	Site Development (21, 22)
0.51	77	WOODS D (1S, 302S, 303S)
10.06	77	Woods, Good, HSG D (11, 12, 20, 40, 50)
0.03	77	Woods, Good, HSG D Ocean Ridge (12)
24.22	**84**	**TOTAL AREA**

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=1.75"
Flow Length=660' Tc=9.9 min CN=86 Runoff=4.67 cfs 0.379 af

Subcatchment 3: Sub 3 Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=1.75"
Flow Length=300' Tc=9.4 min CN=86 Runoff=0.55 cfs 0.044 af

Subcatchment 6: Sub 6 Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=1.60"
Flow Length=235' Tc=5.0 min CN=84 Runoff=0.82 cfs 0.056 af

Subcatchment 11: Sub 11 Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=1.46"
Flow Length=375' Tc=7.3 min CN=82 Runoff=3.06 cfs 0.228 af

Subcatchment 12: Sub 12 Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=1.26"
Flow Length=710' Tc=21.5 min CN=79 Runoff=2.47 cfs 0.275 af

Subcatchment 15: Sub 15 Runoff Area=0.27 ac 66.67% Impervious Runoff Depth=2.26"
Flow Length=342' Tc=5.0 min CN=92 Runoff=0.72 cfs 0.051 af

Subcatchment 15A: Sub 15A Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=2.26"
Flow Length=87' Tc=5.0 min CN=92 Runoff=0.24 cfs 0.017 af

Subcatchment 20: Subarea 2 Runoff Area=6.36 ac 4.61% Impervious Runoff Depth=1.20"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=4.75 cfs 0.636 af

Subcatchment 21: Sub 21 Runoff Area=3.31 ac 63.75% Impervious Runoff Depth=2.16"
Tc=5.0 min CN=91 Runoff=8.58 cfs 0.597 af

Subcatchment 22: Sub 22 Runoff Area=0.70 ac 64.29% Impervious Runoff Depth=2.26"
Tc=5.0 min CN=92 Runoff=1.88 cfs 0.132 af

Subcatchment 23: Sub 23 Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=1.33"
Tc=5.0 min CN=80 Runoff=0.32 cfs 0.022 af

Subcatchment 40: Sub 40 Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=1.14"
Flow Length=250' Tc=9.1 min CN=77 Runoff=1.30 cfs 0.106 af

Subcatchment 50: Sub 50 Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=1.46"
Flow Length=360' Tc=9.9 min CN=82 Runoff=1.77 cfs 0.145 af

Subcatchment 100: Subarea 100 Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=572' Tc=6.6 min CN=98 Runoff=0.65 cfs 0.053 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=2.08"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.45 cfs 0.033 af

Subcatchment 300: Subarea 300 Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=1.91"
Flow Length=190' Tc=9.3 min CN=88 Runoff=1.63 cfs 0.130 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=2.08"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=2.76 cfs 0.220 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=1.53"
Flow Length=150' Tc=8.1 min CN=83 Runoff=0.96 cfs 0.074 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.53' Max Vel=0.62 fps Inflow=2.76 cfs 0.220 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=2.49 cfs 0.220 af

Reach 4R: SP#2 Inflow=1.30 cfs 0.106 af
Outflow=1.30 cfs 0.106 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.40' Max Vel=4.38 fps Inflow=1.22 cfs 0.130 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=1.22 cfs 0.130 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.39' Max Vel=0.54 fps Inflow=1.63 cfs 0.130 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=1.53 cfs 0.130 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.15' Max Vel=0.61 fps Inflow=1.24 cfs 0.423 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=1.24 cfs 0.423 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=15.83 cfs 3.091 af
Outflow=15.83 cfs 3.091 af

Reach 122R: ROADWAY GUTTER Avg. Flow Depth=0.23' Max Vel=3.61 fps Inflow=2.47 cfs 0.275 af
n=0.025 L=290.0' S=0.0379 '/' Capacity=10.97 cfs Outflow=2.46 cfs 0.275 af

Reach 123R: CURB ROAD GUTTER Avg. Flow Depth=0.15' Max Vel=3.20 fps Inflow=2.69 cfs 0.445 af
n=0.013 L=80.0' S=0.0200 '/' Capacity=48.18 cfs Outflow=2.68 cfs 0.445 af

Reach 210R: Woods overland Avg. Flow Depth=0.08' Max Vel=1.49 fps Inflow=1.47 cfs 0.579 af
n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=1.47 cfs 0.578 af

Reach 220R: Access Ditch Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.025 L=310.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=0.00 cfs 0.000 af

Reach 221R: Overland Flow Avg. Flow Depth=0.03' Max Vel=1.19 fps Inflow=0.40 cfs 0.170 af
n=0.040 L=180.0' S=0.1111 '/' Capacity=59.50 cfs Outflow=0.40 cfs 0.170 af

Reach 240R: EXISTING CHANNEL Avg. Flow Depth=0.15' Max Vel=3.28 fps Inflow=1.23 cfs 0.423 af
n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=1.23 cfs 0.423 af

Reach 241R: EXISTING CHANNEL Avg. Flow Depth=0.19' Max Vel=4.57 fps Inflow=2.44 cfs 1.002 af
n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=2.44 cfs 1.001 af

Reach 340R: Woodland Flow Avg. Flow Depth=0.11' Max Vel=1.81 fps Inflow=1.24 cfs 0.423 af
n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=1.23 cfs 0.423 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=159.97' Storage=6,326 cf Inflow=4.17 cfs 0.424 af
Outflow=1.24 cfs 0.423 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.52' Storage=815 cf Inflow=1.53 cfs 0.130 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=1.22 cfs 0.130 af

Pond 60R: FIELD CB Peak Elev=90.46' Inflow=0.82 cfs 0.056 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=0.82 cfs 0.056 af

Pond 62P: Driveway Culvert Peak Elev=89.27' Storage=476 cf Inflow=6.96 cfs 1.693 af
Primary=6.80 cfs 1.693 af Secondary=0.00 cfs 0.000 af Outflow=6.80 cfs 1.693 af

Pond 66P: 24" Cross culvert Peak Elev=85.91' Storage=51 cf Inflow=7.30 cfs 1.838 af
Primary=7.30 cfs 1.838 af Secondary=0.00 cfs 0.000 af Outflow=7.30 cfs 1.838 af

Pond 100R: Vortech-DMH2 Peak Elev=108.20' Inflow=5.64 cfs 0.462 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=5.64 cfs 0.462 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=99.58' Inflow=5.64 cfs 0.462 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=5.64 cfs 0.462 af

Pond 102R: DMH1606-DMH9 Peak Elev=92.50' Inflow=5.64 cfs 0.462 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=5.64 cfs 0.462 af

Pond 103R: DMH9-DMH8 Peak Elev=91.36' Inflow=10.55 cfs 1.188 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=10.55 cfs 1.188 af

Pond 104R: DMH8-DMH200 Peak Elev=91.77' Inflow=11.32 cfs 1.253 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=11.32 cfs 1.253 af

Pond 105R: DMH200-OUTLET Peak Elev=89.05' Inflow=11.32 cfs 1.253 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=11.32 cfs 1.253 af

Pond 210P: Sand Filter mc3500 Peak Elev=127.36' Storage=12,652 cf Inflow=8.58 cfs 0.597 af
Outflow=1.47 cfs 0.579 af

Pond 220P: UDF Peak Elev=126.19' Storage=3,249 cf Inflow=2.19 cfs 0.154 af
Primary=0.36 cfs 0.153 af Secondary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.153 af

Total Runoff Area = 24.22 ac Runoff Volume = 3.218 af Average Runoff Depth = 1.59"
72.85% Pervious = 17.64 ac 27.15% Impervious = 6.58 ac

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 4.67 cfs @ 12.14 hrs, Volume= 0.379 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.90	98	IMPERVIOUS
*	0.38	77	WOODS D
*	1.32	80	LAWN D
	2.60	86	Weighted Average
	1.70		65.38% Pervious Area
	0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.55 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.04	98	Paved roads Ocean Ave
	0.26	84	1 acre lots, 20% imp, HSG D
	0.30	86	Weighted Average
	0.21		69.33% Pervious Area
	0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D**
					Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035
4.1	235	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11: Sub 11

Runoff = 3.06 cfs @ 12.11 hrs, Volume= 0.228 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	1.04	77	Woods, Good, HSG D
*	0.19	98	Paved roads Ocean Ave
*	0.05	98	Paved roads, Site Drive
	0.02	80	>75% Grass cover, Good, HSG D
	0.29	84	1 acre lots, 20% imp, HSG D
	0.29	87	1/4 acre lots, 38% imp, HSG D
	1.88	82	Weighted Average
	1.47		78.29% Pervious Area
	0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 2.47 cfs @ 12.31 hrs, Volume= 0.275 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	2.01	77	Woods, Good, HSG D
	0.18	80	>75% Grass cover, Good, HSG D
*	0.04	98	Paved roads OCEAN AVE
*	0.07	98	Roofs, OCEAN RIDGE
*	0.05	98	Paved roads Ocean Ridge
*	0.03	77	Woods, Good, HSG D Ocean Ridge
*	0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
	2.61	79	Weighted Average
	2.45		93.87% Pervious Area
	0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	330	0.0500	9.46	47.31	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.025 Earth, clean & winding
21.5	710	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 0.72 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.18	98	Paved roads Site Drive
	0.09	80	>75% Grass cover, Good, HSG D
	0.27	92	Weighted Average
	0.09		33.33% Pervious Area
	0.18		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
3.6					**Direct Entry, C-D**
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.06	98	Paved roads Site Drive
	0.03	80	>75% Grass cover, Good, HSG D
	0.09	92	Weighted Average
	0.03		33.33% Pervious Area
	0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
4.5					**Direct Entry, C-D**
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 4.75 cfs @ 12.46 hrs, Volume= 0.636 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.64	87	1/4 acre lots, 38% imp, HSG D
	0.12	80	>75% Grass cover, Good, HSG D
*	0.05	98	Roadway, Ocean Ave
	5.55	77	Woods, Good, HSG D
	6.36	78	Weighted Average
	6.07		95.39% Pervious Area
	0.29		4.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 8.58 cfs @ 12.07 hrs, Volume= 0.597 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	1.20	80	>75% Grass cover, Good, HSG D
*	2.11	98	Site Development
	3.31	91	Weighted Average
	1.20		36.25% Pervious Area
	2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 22: Sub 22

Runoff = 1.88 cfs @ 12.07 hrs, Volume= 0.132 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.45	98	Site Development
	0.25	80	>75% Grass cover, Good, HSG D
	0.70	92	Weighted Average
	0.25		35.71% Pervious Area
	0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 23: Sub 23

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 40: Sub 40

Runoff = 1.30 cfs @ 12.14 hrs, Volume= 0.106 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.4	200	0.0750	1.37		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
9.1	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 1.77 cfs @ 12.14 hrs, Volume= 0.145 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.34	77	Woods, Good, HSG D
	0.09	80	>75% Grass cover, Good, HSG D
*	0.03	98	Paved roads Ocean Ave
	0.73	84	1 acre lots, 20% imp, HSG D
	1.19	82	Weighted Average
	1.01		85.21% Pervious Area
	0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.22	98	Roadway
	0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER** Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.11	98	IMPERVIOUS
* 0.08	80	LAWN D
0.19	90	Weighted Average
0.08		42.11% Pervious Area
0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn** Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway** Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope** Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.09	98	Roadway
0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow** Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.37	98	IMPERVIOUS
*	0.45	80	LAWN D
	0.82	88	Weighted Average
	0.45		54.88% Pervious Area
	0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD** Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.74	98	IMPERVIOUS
*	0.05	77	WOODS D
*	0.48	80	LAWN D
	1.27	90	Weighted Average
	0.53		41.73% Pervious Area
	0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC** Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:** Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 0.96 cfs @ 12.12 hrs, Volume= 0.074 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.12	98	IMPERVIOUS
*	0.08	77	WOODS D
*	0.38	80	LAWN D
	0.58	83	Weighted Average
	0.46		79.31% Pervious Area
	0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB** Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 2.08" for Cumberland_02 event
Inflow = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af
Outflow = 2.49 cfs @ 12.25 hrs, Volume= 0.220 af, Atten= 10%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.62 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 17.1 min

Peak Storage= 685 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 1.14" for Cumberland_02 event
Inflow = 1.30 cfs @ 12.14 hrs, Volume= 0.106 af
Outflow = 1.30 cfs @ 12.14 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

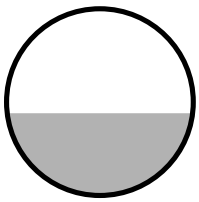
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af
Outflow = 1.22 cfs @ 12.33 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.38 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af
Outflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af, Atten= 6%, Lag= 5.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 12.7 min

Peak Storage= 325 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af
Outflow = 1.24 cfs @ 12.87 hrs, Volume= 0.423 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 12.0 min

Peak Storage= 303 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.47% Impervious, Inflow Depth > 1.61" for Cumberland_02 event
Inflow = 15.83 cfs @ 12.13 hrs, Volume= 3.091 af
Outflow = 15.83 cfs @ 12.13 hrs, Volume= 3.091 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 122R: ROADWAY GUTTER

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 1.26" for Cumberland_02 event
Inflow = 2.47 cfs @ 12.31 hrs, Volume= 0.275 af
Outflow = 2.46 cfs @ 12.35 hrs, Volume= 0.275 af, Atten= 0%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.61 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 3.7 min

Peak Storage= 198 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 0.50' Flow Area= 2.0 sf, Capacity= 10.97 cfs

2.00' x 0.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 5.0 '/' Top Width= 6.00'
Length= 290.0' Slope= 0.0379 '/'
Inlet Invert= 106.50', Outlet Invert= 95.50'



‡

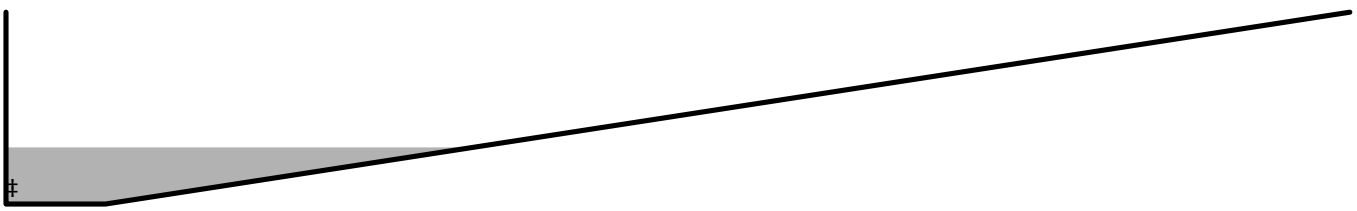
Summary for Reach 123R: CURB ROAD GUTTER

Inflow Area = 3.60 ac, 18.61% Impervious, Inflow Depth > 1.48" for Cumberland_02 event
Inflow = 2.69 cfs @ 12.37 hrs, Volume= 0.445 af
Outflow = 2.68 cfs @ 12.39 hrs, Volume= 0.445 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.20 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 1.2 min

Peak Storage= 67 cf @ 12.38 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 0.50' Flow Area= 7.3 sf, Capacity= 48.18 cfs

2.00' x 0.50' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 0.0 50.0 '/' Top Width= 27.00'
Length= 80.0' Slope= 0.0200 '/'
Inlet Invert= 95.50', Outlet Invert= 93.90'



‡

Summary for Reach 210R: Woods overland

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth > 2.10" for Cumberland_02 event
Inflow = 1.47 cfs @ 12.53 hrs, Volume= 0.579 af
Outflow = 1.47 cfs @ 12.55 hrs, Volume= 0.578 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.49 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 1.3 min

Peak Storage= 49 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 50.0' Slope= 0.0400 '/'
Inlet Invert= 112.00', Outlet Invert= 110.00'



‡

Summary for Reach 220R: Access Ditch

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 310.0' Slope= 0.0500 '/'
Inlet Invert= 126.00', Outlet Invert= 110.50'



‡

Summary for Reach 221R: Overland Flow

Inflow Area = 0.99 ac, 51.52% Impervious, Inflow Depth > 2.06" for Cumberland_02 event
Inflow = 0.40 cfs @ 12.51 hrs, Volume= 0.170 af
Outflow = 0.40 cfs @ 12.58 hrs, Volume= 0.170 af, Atten= 1%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.19 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.52 fps, Avg. Travel Time= 5.7 min

Peak Storage= 60 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 59.50 cfs

10.00' x 0.50' deep channel, n= 0.040 Woods Overland flow
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 180.0' Slope= 0.1111 '/'
Inlet Invert= 120.00', Outlet Invert= 100.00'



‡

Summary for Reach 240R: EXISTING CHANNEL

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
Inflow = 1.23 cfs @ 13.07 hrs, Volume= 0.423 af
Outflow = 1.23 cfs @ 13.12 hrs, Volume= 0.423 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 5.0 min

Peak Storage= 128 cf @ 13.09 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 340.0' Slope= 0.0529 '/'
Inlet Invert= 128.00', Outlet Invert= 110.00'



‡

Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 5.98 ac, 55.85% Impervious, Inflow Depth > 2.01" for Cumberland_02 event
Inflow = 2.44 cfs @ 12.81 hrs, Volume= 1.002 af
Outflow = 2.44 cfs @ 12.84 hrs, Volume= 1.001 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.57 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.99 fps, Avg. Travel Time= 2.5 min

Peak Storage= 160 cf @ 12.82 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 300.0' Slope= 0.0750 '/'
Inlet Invert= 110.00', Outlet Invert= 87.50'



‡

Summary for Reach 340R: Woodland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.87 hrs, Volume= 0.423 af
Outflow = 1.23 cfs @ 13.07 hrs, Volume= 0.423 af, Atten= 0%, Lag= 11.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.81 fps, Min. Travel Time= 6.5 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 18.0 min

Peak Storage= 478 cf @ 12.96 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 700.0' Slope= 0.0421 '/'
Inlet Invert= 157.50', Outlet Invert= 128.00'



‡

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 4.17 cfs @ 12.26 hrs, Volume= 0.424 af
Outflow = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af, Atten= 70%, Lag= 29.7 min
Primary = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 159.97' @ 12.75 hrs Surf.Area= 4,273 sf Storage= 6,326 cf

Plug-Flow detention time= 80.6 min calculated for 0.423 af (100% of inflow)
Center-of-Mass det. time= 79.6 min (919.1 - 839.5)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=1.24 cfs @ 12.75 hrs HW=159.97' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.24 cfs @ 6.32 fps)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af
Outflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af, Atten= 20%, Lag= 5.7 min
Primary = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 160.52' @ 12.32 hrs Surf.Area= 1,371 sf Storage= 815 cf

Plug-Flow detention time= 33.0 min calculated for 0.130 af (100% of inflow)
Center-of-Mass det. time= 33.1 min (864.0 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.22 cfs @ 12.32 hrs HW=160.52' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.22 cfs @ 3.38 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 1.60" for Cumberland_02 event
Inflow = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af
Outflow = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 90.46' @ 12.08 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.08 hrs HW=90.46' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.81 cfs @ 2.31 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.76 ac, 29.23% Impervious, Inflow Depth > 1.59" for Cumberland_02 event
Inflow = 6.96 cfs @ 12.53 hrs, Volume= 1.693 af
Outflow = 6.80 cfs @ 12.59 hrs, Volume= 1.693 af, Atten= 2%, Lag= 4.0 min
Primary = 6.80 cfs @ 12.59 hrs, Volume= 1.693 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 89.27' @ 12.59 hrs Surf.Area= 1,151 sf Storage= 476 cf

Plug-Flow detention time= 0.3 min calculated for 1.693 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,040.4 - 1,040.1)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=6.80 cfs @ 12.59 hrs HW=89.27' (Free Discharge)
1=Culvert (Inlet Controls 6.80 cfs @ 3.85 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=88.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.95 ac, 28.00% Impervious, Inflow Depth > 1.58" for Cumberland_02 event
Inflow = 7.30 cfs @ 12.54 hrs, Volume= 1.838 af
Outflow = 7.30 cfs @ 12.54 hrs, Volume= 1.838 af, Atten= 0%, Lag= 0.1 min
Primary = 7.30 cfs @ 12.54 hrs, Volume= 1.838 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6
Peak Elev= 85.91' @ 12.54 hrs Surf.Area= 59 sf Storage= 51 cf

Plug-Flow detention time= 0.3 min calculated for 1.837 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (1,024.9 - 1,024.7)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=7.30 cfs @ 12.54 hrs HW=85.91' (Free Discharge)
└**1=Culvert** (Barrel Controls 7.30 cfs @ 4.16 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 1.81" for Cumberland_02 event
Inflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af
Outflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 108.20' @ 12.13 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.64 cfs @ 12.13 hrs HW=108.20' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.64 cfs @ 3.73 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 1.81" for Cumberland_02 event
Inflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af
Outflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 99.58' @ 12.13 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.64 cfs @ 12.13 hrs HW=99.58' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.64 cfs @ 3.73 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 1.81" for Cumberland_02 event
Inflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af
Outflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 92.50' @ 12.13 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.64 cfs @ 12.13 hrs HW=92.50' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.64 cfs @ 3.73 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.76 ac, 28.40% Impervious, Inflow Depth > 1.63" for Cumberland_02 event
Inflow = 10.55 cfs @ 12.12 hrs, Volume= 1.188 af
Outflow = 10.55 cfs @ 12.12 hrs, Volume= 1.188 af, Atten= 0%, Lag= 0.0 min
Primary = 10.55 cfs @ 12.12 hrs, Volume= 1.188 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 91.36' @ 12.12 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.54 cfs @ 12.12 hrs HW=91.35' (Free Discharge)
↑**1=Culvert** (Inlet Controls 10.54 cfs @ 5.96 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 1.64" for Cumberland_02 event
Inflow = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af
Outflow = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af, Atten= 0%, Lag= 0.0 min
Primary = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 91.77' @ 12.12 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.31 cfs @ 12.12 hrs HW=91.76' (Free Discharge)
1=Culvert (Barrel Controls 11.31 cfs @ 6.40 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 1.64" for Cumberland_02 event
Inflow = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af
Outflow = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af, Atten= 0%, Lag= 0.0 min
Primary = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 89.05' @ 12.12 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.31 cfs @ 12.12 hrs HW=89.05' (Free Discharge)
1=Culvert (Inlet Controls 11.31 cfs @ 6.40 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 2.16" for Cumberland_02 event
Inflow = 8.58 cfs @ 12.07 hrs, Volume= 0.597 af
Outflow = 1.47 cfs @ 12.53 hrs, Volume= 0.579 af, Atten= 83%, Lag= 27.5 min
Primary = 1.47 cfs @ 12.53 hrs, Volume= 0.579 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 127.36' @ 12.53 hrs Surf.Area= 6,773 sf Storage= 12,652 cf

Plug-Flow detention time= 519.2 min calculated for 0.579 af (97% of inflow)
Center-of-Mass det. time= 501.0 min (1,303.7 - 802.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=1.47 cfs @ 12.53 hrs HW=127.36' (Free Discharge)
└**1=Culvert** (Passes 1.47 cfs of 14.15 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 12.10 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.34 cfs @ 2.54 fps)
  └**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 2.05" for Cumberland_02 event
Inflow = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af
Outflow = 0.36 cfs @ 12.54 hrs, Volume= 0.153 af, Atten= 84%, Lag= 28.2 min
Primary = 0.36 cfs @ 12.54 hrs, Volume= 0.153 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 126.19' @ 12.54 hrs Surf.Area= 3,174 sf Storage= 3,249 cf

Plug-Flow detention time= 533.0 min calculated for 0.153 af (100% of inflow)
Center-of-Mass det. time= 531.5 min (1,336.0 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**4.0" Vert. Orifice/Grate X 4.00** C= 0.600
#5	Device 1	127.00'	**20.0" Vert. Orifice/Grate** C= 0.600
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.36 cfs @ 12.54 hrs HW=126.19' (Free Discharge)
└**1=Culvert** (Passes 0.36 cfs of 5.68 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 8.78 fps)
  │ └**3=Exfiltration** (Passes 0.04 cfs of 0.18 cfs potential flow)
  ├**4=Orifice/Grate** (Orifice Controls 0.32 cfs @ 1.50 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=3.10"
Flow Length=660' Tc=9.9 min CN=86 Runoff=8.20 cfs 0.671 af

Subcatchment 3: Sub 3 Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=3.10"
Flow Length=300' Tc=9.4 min CN=86 Runoff=0.96 cfs 0.077 af

Subcatchment 6: Sub 6 Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=2.91"
Flow Length=235' Tc=5.0 min CN=84 Runoff=1.48 cfs 0.102 af

Subcatchment 11: Sub 11 Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=2.72"
Flow Length=375' Tc=7.3 min CN=82 Runoff=5.73 cfs 0.427 af

Subcatchment 12: Sub 12 Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=2.46"
Flow Length=710' Tc=21.5 min CN=79 Runoff=4.93 cfs 0.535 af

Subcatchment 15: Sub 15 Runoff Area=0.27 ac 66.67% Impervious Runoff Depth=3.70"
Flow Length=342' Tc=5.0 min CN=92 Runoff=1.16 cfs 0.083 af

Subcatchment 15A: Sub 15A Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=3.70"
Flow Length=87' Tc=5.0 min CN=92 Runoff=0.39 cfs 0.028 af

Subcatchment 20: Subarea 2 Runoff Area=6.36 ac 4.61% Impervious Runoff Depth=2.38"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=9.65 cfs 1.259 af

Subcatchment 21: Sub 21 Runoff Area=3.31 ac 63.75% Impervious Runoff Depth=3.59"
Tc=5.0 min CN=91 Runoff=13.91 cfs 0.992 af

Subcatchment 22: Sub 22 Runoff Area=0.70 ac 64.29% Impervious Runoff Depth=3.70"
Tc=5.0 min CN=92 Runoff=3.00 cfs 0.216 af

Subcatchment 23: Sub 23 Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=2.55"
Tc=5.0 min CN=80 Runoff=0.62 cfs 0.042 af

Subcatchment 40: Sub 40 Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=2.29"
Flow Length=250' Tc=9.1 min CN=77 Runoff=2.70 cfs 0.214 af

Subcatchment 50: Sub 50 Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=2.72"
Flow Length=360' Tc=9.9 min CN=82 Runoff=3.33 cfs 0.270 af

Subcatchment 100: Subarea 100 Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=572' Tc=6.6 min CN=98 Runoff=0.97 cfs 0.080 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=3.49"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.74 cfs 0.055 af

Subcatchment 300: Subarea 300 Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.42 cfs 0.033 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=3.29"
Flow Length=190' Tc=9.3 min CN=88 Runoff=2.78 cfs 0.225 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=3.49"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=4.55 cfs 0.370 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=2.81"
Flow Length=150' Tc=8.1 min CN=83 Runoff=1.78 cfs 0.136 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.71' Max Vel=0.73 fps Inflow=4.55 cfs 0.370 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=4.19 cfs 0.370 af

Reach 4R: SP#2 Inflow=2.70 cfs 0.214 af
Outflow=2.70 cfs 0.214 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.58' Max Vel=5.06 fps Inflow=2.22 cfs 0.225 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=2.22 cfs 0.225 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.54' Max Vel=0.65 fps Inflow=2.78 cfs 0.225 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=2.64 cfs 0.225 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.24' Max Vel=0.78 fps Inflow=2.79 cfs 0.730 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=2.78 cfs 0.730 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=31.13 cfs 5.570 af
Outflow=31.13 cfs 5.570 af

Reach 122R: ROADWAY GUTTER Avg. Flow Depth=0.33' Max Vel=4.40 fps Inflow=4.93 cfs 0.535 af
n=0.025 L=290.0' S=0.0379 '/' Capacity=10.97 cfs Outflow=4.91 cfs 0.535 af

Reach 123R: CURB ROAD GUTTER Avg. Flow Depth=0.21' Max Vel=3.96 fps Inflow=6.20 cfs 0.819 af
n=0.013 L=80.0' S=0.0200 '/' Capacity=48.18 cfs Outflow=6.19 cfs 0.819 af

Reach 210R: Woods overland Avg. Flow Depth=0.14' Max Vel=1.99 fps Inflow=3.53 cfs 0.965 af
n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=3.53 cfs 0.965 af

Reach 220R: Access Ditch Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.025 L=310.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=0.00 cfs 0.000 af

Reach 221R: Overland Flow Avg. Flow Depth=0.06' Max Vel=1.82 fps Inflow=1.28 cfs 0.284 af
n=0.040 L=180.0' S=0.1111 '/' Capacity=59.50 cfs Outflow=1.28 cfs 0.284 af

Reach 240R: EXISTING CHANNEL Avg. Flow Depth=0.23' Max Vel=4.20 fps Inflow=2.75 cfs 0.730 af
n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=2.75 cfs 0.730 af

Reach 241R: EXISTING CHANNEL Avg. Flow Depth=0.30' Max Vel=5.88 fps Inflow=5.75 cfs 1.695 af
n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=5.75 cfs 1.694 af

Reach 340R: Woodland Flow Avg. Flow Depth=0.17' Max Vel=2.33 fps Inflow=2.78 cfs 0.730 af
n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=2.75 cfs 0.730 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=160.74' Storage=10,521 cf Inflow=7.37 cfs 0.730 af
Outflow=2.79 cfs 0.730 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.73' Storage=1,151 cf Inflow=2.64 cfs 0.225 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=2.22 cfs 0.225 af

Pond 60R: FIELD CB Peak Elev=90.65' Inflow=1.48 cfs 0.102 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=1.48 cfs 0.102 af

Pond 62P: Driveway Culvert Peak Elev=89.73' Storage=1,325 cf Inflow=14.61 cfs 3.055 af
Primary=8.18 cfs 2.731 af Secondary=6.40 cfs 0.324 af Outflow=14.58 cfs 3.055 af

Pond 66P: 24" Cross culvert Peak Elev=87.19' Storage=365 cf Inflow=15.81 cfs 3.325 af
Primary=15.75 cfs 3.325 af Secondary=0.00 cfs 0.000 af Outflow=15.75 cfs 3.325 af

Pond 100R: Vortech-DMH2 Peak Elev=109.07' Inflow=9.78 cfs 0.809 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=9.78 cfs 0.809 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=100.45' Inflow=9.78 cfs 0.809 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=9.78 cfs 0.809 af

Pond 102R: DMH1606-DMH9 Peak Elev=93.37' Inflow=9.78 cfs 0.809 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=9.78 cfs 0.809 af

Pond 103R: DMH9-DMH8 Peak Elev=96.14' Inflow=19.72 cfs 2.135 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=19.72 cfs 2.135 af

Pond 104R: DMH8-DMH200 Peak Elev=100.74' Inflow=21.02 cfs 2.245 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=21.02 cfs 2.245 af

Pond 105R: DMH200-OUTLET Peak Elev=93.38' Inflow=21.02 cfs 2.245 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=21.02 cfs 2.245 af

Pond 210P: Sand Filter mc3500 Peak Elev=128.82' Storage=19,250 cf Inflow=13.91 cfs 0.992 af
Outflow=3.53 cfs 0.965 af

Pond 220P: UDF Peak Elev=126.60' Storage=4,625 cf Inflow=3.62 cfs 0.258 af
Primary=1.15 cfs 0.256 af Secondary=0.00 cfs 0.000 af Outflow=1.15 cfs 0.256 af

Total Runoff Area = 24.22 ac Runoff Volume = 5.814 af Average Runoff Depth = 2.88"
72.85% Pervious = 17.64 ac 27.15% Impervious = 6.58 ac

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 8.20 cfs @ 12.14 hrs, Volume= 0.671 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.90	98	IMPERVIOUS
*	0.38	77	WOODS D
*	1.32	80	LAWN D
	2.60	86	Weighted Average
	1.70		65.38% Pervious Area
	0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 0.077 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.04	98	Paved roads Ocean Ave
	0.26	84	1 acre lots, 20% imp, HSG D
	0.30	86	Weighted Average
	0.21		69.33% Pervious Area
	0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D**
					Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035
4.1	235	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11: Sub 11

Runoff = 5.73 cfs @ 12.11 hrs, Volume= 0.427 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	1.04	77	Woods, Good, HSG D
*	0.19	98	Paved roads Ocean Ave
*	0.05	98	Paved roads, Site Drive
	0.02	80	>75% Grass cover, Good, HSG D
	0.29	84	1 acre lots, 20% imp, HSG D
	0.29	87	1/4 acre lots, 38% imp, HSG D
	1.88	82	Weighted Average
	1.47		78.29% Pervious Area
	0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 4.93 cfs @ 12.30 hrs, Volume= 0.535 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	2.01	77	Woods, Good, HSG D
	0.18	80	>75% Grass cover, Good, HSG D
*	0.04	98	Paved roads OCEAN AVE
*	0.07	98	Roofs, OCEAN RIDGE
*	0.05	98	Paved roads Ocean Ridge
*	0.03	77	Woods, Good, HSG D Ocean Ridge
*	0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
	2.61	79	Weighted Average
	2.45		93.87% Pervious Area
	0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	330	0.0500	9.46	47.31	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.025 Earth, clean & winding
21.5	710	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.083 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.18	98	Paved roads Site Drive
	0.09	80	>75% Grass cover, Good, HSG D
	0.27	92	Weighted Average
	0.09		33.33% Pervious Area
	0.18		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
3.6					**Direct Entry, C-D**
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 0.028 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.06	98	Paved roads Site Drive
	0.03	80	>75% Grass cover, Good, HSG D
	0.09	92	Weighted Average
	0.03		33.33% Pervious Area
	0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
4.5					**Direct Entry, C-D**
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 9.65 cfs @ 12.46 hrs, Volume= 1.259 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.64	87	1/4 acre lots, 38% imp, HSG D
	0.12	80	>75% Grass cover, Good, HSG D
*	0.05	98	Roadway, Ocean Ave
	5.55	77	Woods, Good, HSG D
	6.36	78	Weighted Average
	6.07		95.39% Pervious Area
	0.29		4.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 13.91 cfs @ 12.07 hrs, Volume= 0.992 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	1.20	80	>75% Grass cover, Good, HSG D
*	2.11	98	Site Development
	3.31	91	Weighted Average
	1.20		36.25% Pervious Area
	2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 22: Sub 22

Runoff = 3.00 cfs @ 12.07 hrs, Volume= 0.216 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.45	98	Site Development
	0.25	80	>75% Grass cover, Good, HSG D
	0.70	92	Weighted Average
	0.25		35.71% Pervious Area
	0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 23: Sub 23

Runoff = 0.62 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 40: Sub 40

Runoff = 2.70 cfs @ 12.13 hrs, Volume= 0.214 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.4	200	0.0750	1.37		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
9.1	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 3.33 cfs @ 12.14 hrs, Volume= 0.270 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.34	77	Woods, Good, HSG D
	0.09	80	>75% Grass cover, Good, HSG D
*	0.03	98	Paved roads Ocean Ave
	0.73	84	1 acre lots, 20% imp, HSG D
	1.19	82	Weighted Average
	1.01		85.21% Pervious Area
	0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.22	98	Roadway
	0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER** Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.11	98	IMPERVIOUS
*	0.08	80	LAWN D
	0.19	90	Weighted Average
	0.08		42.11% Pervious Area
	0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn**
					Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway**
					Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope**
					Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.033 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.09	98	Roadway
	0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow**
					Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.37	98	IMPERVIOUS
*	0.45	80	LAWN D
	0.82	88	Weighted Average
	0.45		54.88% Pervious Area
	0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD**
					Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.74	98	IMPERVIOUS
*	0.05	77	WOODS D
*	0.48	80	LAWN D
	1.27	90	Weighted Average
	0.53		41.73% Pervious Area
	0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC**
					Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:**
					Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 1.78 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.12	98	IMPERVIOUS
*	0.08	77	WOODS D
*	0.38	80	LAWN D
	0.58	83	Weighted Average
	0.46		79.31% Pervious Area
	0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB** Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 3.49" for Cumberland_10 event
Inflow = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af
Outflow = 4.19 cfs @ 12.23 hrs, Volume= 0.370 af, Atten= 8%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.73 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 14.8 min

Peak Storage= 980 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 2.29" for Cumberland_10 event
Inflow = 2.70 cfs @ 12.13 hrs, Volume= 0.214 af
Outflow = 2.70 cfs @ 12.13 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

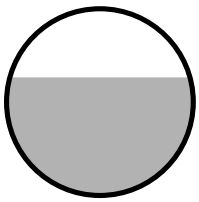
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af
Outflow = 2.22 cfs @ 12.29 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.06 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.7 min

Peak Storage= 22 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af
Outflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af, Atten= 5%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.65 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 11.0 min

Peak Storage= 470 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
Inflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af
Outflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af, Atten= 0%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.24 fps, Avg. Travel Time= 10.5 min

Peak Storage= 532 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.47% Impervious, Inflow Depth > 2.89" for Cumberland_10 event
Inflow = 31.13 cfs @ 12.14 hrs, Volume= 5.570 af
Outflow = 31.13 cfs @ 12.14 hrs, Volume= 5.570 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 122R: ROADWAY GUTTER

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 2.46" for Cumberland_10 event
Inflow = 4.93 cfs @ 12.30 hrs, Volume= 0.535 af
Outflow = 4.91 cfs @ 12.33 hrs, Volume= 0.535 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.40 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 3.1 min

Peak Storage= 324 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.50' Flow Area= 2.0 sf, Capacity= 10.97 cfs

2.00' x 0.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 5.0 '/' Top Width= 6.00'
Length= 290.0' Slope= 0.0379 '/'
Inlet Invert= 106.50', Outlet Invert= 95.50'



‡

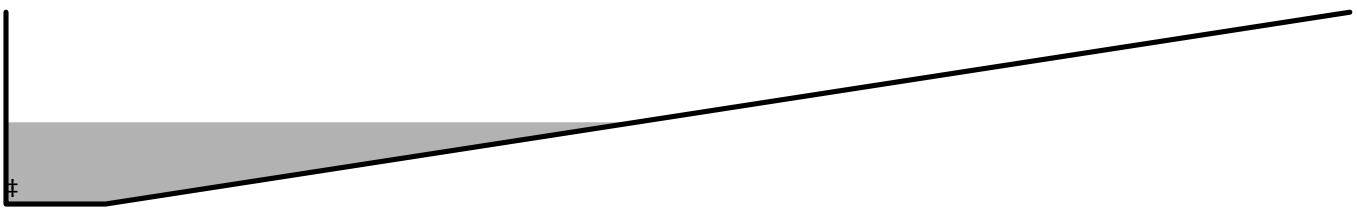
Summary for Reach 123R: CURB ROAD GUTTER

Inflow Area = 3.60 ac, 18.61% Impervious, Inflow Depth > 2.73" for Cumberland_10 event
Inflow = 6.20 cfs @ 12.33 hrs, Volume= 0.819 af
Outflow = 6.19 cfs @ 12.34 hrs, Volume= 0.819 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.96 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 1.1 min

Peak Storage= 125 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 0.50' Flow Area= 7.3 sf, Capacity= 48.18 cfs

2.00' x 0.50' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 0.0 50.0 '/' Top Width= 27.00'
Length= 80.0' Slope= 0.0200 '/'
Inlet Invert= 95.50', Outlet Invert= 93.90'



‡

Summary for Reach 210R: Woods overland

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth > 3.50" for Cumberland_10 event
Inflow = 3.53 cfs @ 12.43 hrs, Volume= 0.965 af
Outflow = 3.53 cfs @ 12.44 hrs, Volume= 0.965 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.99 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 1.2 min

Peak Storage= 89 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 50.0' Slope= 0.0400 '/'
Inlet Invert= 112.00', Outlet Invert= 110.00'



‡

Summary for Reach 220R: Access Ditch

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 310.0' Slope= 0.0500 '/'
Inlet Invert= 126.00', Outlet Invert= 110.50'



‡

Summary for Reach 221R: Overland Flow

Inflow Area = 0.99 ac, 51.52% Impervious, Inflow Depth > 3.44" for Cumberland_10 event
Inflow = 1.28 cfs @ 12.28 hrs, Volume= 0.284 af
Outflow = 1.28 cfs @ 12.33 hrs, Volume= 0.284 af, Atten= 0%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.82 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 5.2 min

Peak Storage= 127 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 59.50 cfs

10.00' x 0.50' deep channel, n= 0.040 Woods Overland flow
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 180.0' Slope= 0.1111 '/'
Inlet Invert= 120.00', Outlet Invert= 100.00'



‡

Summary for Reach 240R: EXISTING CHANNEL

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
Inflow = 2.75 cfs @ 12.87 hrs, Volume= 0.730 af
Outflow = 2.75 cfs @ 12.91 hrs, Volume= 0.730 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.20 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 4.4 min

Peak Storage= 223 cf @ 12.88 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 340.0' Slope= 0.0529 '/'
Inlet Invert= 128.00', Outlet Invert= 110.00'



‡

Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 5.98 ac, 55.85% Impervious, Inflow Depth > 3.40" for Cumberland_10 event
Inflow = 5.75 cfs @ 12.80 hrs, Volume= 1.695 af
Outflow = 5.75 cfs @ 12.83 hrs, Volume= 1.694 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.88 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.19 fps, Avg. Travel Time= 2.3 min

Peak Storage= 293 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 300.0' Slope= 0.0750 '/'
Inlet Invert= 110.00', Outlet Invert= 87.50'



‡

Summary for Reach 340R: Woodland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
Inflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af
Outflow = 2.75 cfs @ 12.87 hrs, Volume= 0.730 af, Atten= 1%, Lag= 9.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.33 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 15.9 min

Peak Storage= 826 cf @ 12.78 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 700.0' Slope= 0.0421 '/'
Inlet Invert= 157.50', Outlet Invert= 128.00'



‡

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
Inflow = 7.37 cfs @ 12.24 hrs, Volume= 0.730 af
Outflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af, Atten= 62%, Lag= 22.9 min
Primary = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 160.74' @ 12.62 hrs Surf.Area= 5,209 sf Storage= 10,521 cf

Plug-Flow detention time= 75.3 min calculated for 0.730 af (100% of inflow)
Center-of-Mass det. time= 74.8 min (895.1 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=2.79 cfs @ 12.62 hrs HW=160.74' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.49 cfs @ 7.60 fps)
- **2=Orifice/Grate** (Orifice Controls 1.29 cfs @ 2.94 fps)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af
Outflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af, Atten= 16%, Lag= 4.5 min
Primary = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 160.73' @ 12.28 hrs Surf.Area= 1,462 sf Storage= 1,151 cf

Plug-Flow detention time= 25.7 min calculated for 0.225 af (100% of inflow)
Center-of-Mass det. time= 25.8 min (839.5 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.22 cfs @ 12.28 hrs HW=160.73' (Free Discharge)
↑**1=Culvert** (Barrel Controls 2.22 cfs @ 3.82 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 2.91" for Cumberland_10 event
Inflow = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 90.65' @ 12.07 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.47 cfs @ 12.07 hrs HW=90.65' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.47 cfs @ 2.74 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.76 ac, 29.23% Impervious, Inflow Depth > 2.87" for Cumberland_10 event
Inflow = 14.61 cfs @ 12.46 hrs, Volume= 3.055 af
Outflow = 14.58 cfs @ 12.48 hrs, Volume= 3.055 af, Atten= 0%, Lag= 1.3 min
Primary = 8.18 cfs @ 12.48 hrs, Volume= 2.731 af
Secondary = 6.40 cfs @ 12.48 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 89.73' @ 12.48 hrs Surf.Area= 2,672 sf Storage= 1,325 cf

Plug-Flow detention time= 0.8 min calculated for 3.055 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (952.3 - 951.5)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.18 cfs @ 12.48 hrs HW=89.73' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.18 cfs @ 4.63 fps)

Secondary OutFlow Max=6.40 cfs @ 12.48 hrs HW=89.73' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 6.40 cfs @ 1.25 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.95 ac, 28.00% Impervious, Inflow Depth > 2.86" for Cumberland_10 event
Inflow = 15.81 cfs @ 12.46 hrs, Volume= 3.325 af
Outflow = 15.75 cfs @ 12.49 hrs, Volume= 3.325 af, Atten= 0%, Lag= 1.6 min
Primary = 15.75 cfs @ 12.49 hrs, Volume= 3.325 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6
Peak Elev= 87.19' @ 12.49 hrs Surf.Area= 544 sf Storage= 365 cf

Plug-Flow detention time= 0.2 min calculated for 3.324 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (942.0 - 941.8)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=15.75 cfs @ 12.49 hrs HW=87.19' (Free Discharge)
└**1=Culvert** (Inlet Controls 15.75 cfs @ 5.01 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 3.17" for Cumberland_10 event
Inflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af
Outflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af, Atten= 0%, Lag= 0.0 min
Primary = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 109.07' @ 12.13 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=9.76 cfs @ 12.13 hrs HW=109.07' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.76 cfs @ 5.52 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 3.17" for Cumberland_10 event
Inflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af
Outflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af, Atten= 0%, Lag= 0.0 min
Primary = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 100.45' @ 12.13 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=9.76 cfs @ 12.13 hrs HW=100.45' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.76 cfs @ 5.53 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 3.17" for Cumberland_10 event
Inflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af
Outflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af, Atten= 0%, Lag= 0.0 min
Primary = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 93.37' @ 12.13 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=9.76 cfs @ 12.13 hrs HW=93.37' (Free Discharge)
1=Culvert (Inlet Controls 9.76 cfs @ 5.53 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.76 ac, 28.40% Impervious, Inflow Depth > 2.92" for Cumberland_10 event
Inflow = 19.72 cfs @ 12.13 hrs, Volume= 2.135 af
Outflow = 19.72 cfs @ 12.13 hrs, Volume= 2.135 af, Atten= 0%, Lag= 0.0 min
Primary = 19.72 cfs @ 12.13 hrs, Volume= 2.135 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 96.14' @ 12.13 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=19.71 cfs @ 12.13 hrs HW=96.13' (Free Discharge)
1=Culvert (Barrel Controls 19.71 cfs @ 11.15 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 2.94" for Cumberland_10 event
Inflow = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af
Outflow = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af, Atten= 0%, Lag= 0.0 min
Primary = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 100.74' @ 12.13 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=21.00 cfs @ 12.13 hrs HW=100.71' (Free Discharge)
↑**1=Culvert** (Barrel Controls 21.00 cfs @ 11.88 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 2.94" for Cumberland_10 event
Inflow = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af
Outflow = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af, Atten= 0%, Lag= 0.0 min
Primary = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 93.38' @ 12.13 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=21.00 cfs @ 12.13 hrs HW=93.37' (Free Discharge)
↑**1=Culvert** (Inlet Controls 21.00 cfs @ 11.88 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 3.59" for Cumberland_10 event
Inflow = 13.91 cfs @ 12.07 hrs, Volume= 0.992 af
Outflow = 3.53 cfs @ 12.43 hrs, Volume= 0.965 af, Atten= 75%, Lag= 21.7 min
Primary = 3.53 cfs @ 12.43 hrs, Volume= 0.965 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 128.82' @ 12.43 hrs Surf.Area= 6,773 sf Storage= 19,250 cf

Plug-Flow detention time= 339.0 min calculated for 0.965 af (97% of inflow)
Center-of-Mass det. time= 322.9 min (1,111.6 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=3.53 cfs @ 12.43 hrs HW=128.82' (Free Discharge)
└**1=Culvert** (Passes 3.53 cfs of 15.85 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.15 cfs @ 13.43 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.39 cfs @ 6.33 fps)
  └**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 3.44" for Cumberland_10 event
Inflow = 3.62 cfs @ 12.07 hrs, Volume= 0.258 af
Outflow = 1.15 cfs @ 12.37 hrs, Volume= 0.256 af, Atten= 68%, Lag= 17.6 min
Primary = 1.15 cfs @ 12.37 hrs, Volume= 0.256 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 126.60' @ 12.37 hrs Surf.Area= 3,591 sf Storage= 4,625 cf

Plug-Flow detention time= 348.8 min calculated for 0.256 af (99% of inflow)
Center-of-Mass det. time= 344.4 min (1,135.5 - 791.0)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**4.0" Vert. Orifice/Grate X 4.00** C= 0.600
#5	Device 1	127.00'	**20.0" Vert. Orifice/Grate** C= 0.600
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.15 cfs @ 12.37 hrs HW=126.60' (Free Discharge)
└**1=Culvert** (Passes 1.15 cfs of 6.07 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 9.30 fps)
  │ └**3=Exfiltration** (Passes 0.04 cfs of 0.20 cfs potential flow)
  ├**4=Orifice/Grate** (Orifice Controls 1.11 cfs @ 3.18 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=4.22"
Flow Length=660' Tc=9.9 min CN=86 Runoff=11.06 cfs 0.914 af

Subcatchment 3: Sub 3 Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=4.22"
Flow Length=300' Tc=9.4 min CN=86 Runoff=1.30 cfs 0.105 af

Subcatchment 6: Sub 6 Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=4.01"
Flow Length=235' Tc=5.0 min CN=84 Runoff=2.02 cfs 0.140 af

Subcatchment 11: Sub 11 Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=3.80"
Flow Length=375' Tc=7.3 min CN=82 Runoff=7.96 cfs 0.596 af

Subcatchment 12: Sub 12 Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=3.50"
Flow Length=710' Tc=21.5 min CN=79 Runoff=7.01 cfs 0.762 af

Subcatchment 15: Sub 15 Runoff Area=0.27 ac 66.67% Impervious Runoff Depth=4.87"
Flow Length=342' Tc=5.0 min CN=92 Runoff=1.50 cfs 0.110 af

Subcatchment 15A: Sub 15A Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=4.87"
Flow Length=87' Tc=5.0 min CN=92 Runoff=0.50 cfs 0.037 af

Subcatchment 20: Subarea 2 Runoff Area=6.36 ac 4.61% Impervious Runoff Depth=3.40"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=13.85 cfs 1.804 af

Subcatchment 21: Sub 21 Runoff Area=3.31 ac 63.75% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=91 Runoff=18.15 cfs 1.313 af

Subcatchment 22: Sub 22 Runoff Area=0.70 ac 64.29% Impervious Runoff Depth=4.87"
Tc=5.0 min CN=92 Runoff=3.89 cfs 0.284 af

Subcatchment 23: Sub 23 Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=3.60"
Tc=5.0 min CN=80 Runoff=0.87 cfs 0.060 af

Subcatchment 40: Sub 40 Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=3.31"
Flow Length=250' Tc=9.1 min CN=77 Runoff=3.90 cfs 0.308 af

Subcatchment 50: Sub 50 Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=3.80"
Flow Length=360' Tc=9.9 min CN=82 Runoff=4.62 cfs 0.377 af

Subcatchment 100: Subarea 100 Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=572' Tc=6.6 min CN=98 Runoff=1.23 cfs 0.102 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=4.65"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.98 cfs 0.074 af

Subcatchment 300: Subarea 300 Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.53 cfs 0.042 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=4.43"
Flow Length=190' Tc=9.3 min CN=88 Runoff=3.69 cfs 0.303 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=4.65"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=5.97 cfs 0.492 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=3.91"
Flow Length=150' Tc=8.1 min CN=83 Runoff=2.45 cfs 0.189 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.83' Max Vel=0.79 fps Inflow=5.97 cfs 0.492 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=5.56 cfs 0.492 af

Reach 4R: SP#2 Inflow=3.90 cfs 0.308 af
Outflow=3.90 cfs 0.308 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.75' Max Vel=5.29 fps Inflow=3.04 cfs 0.303 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=3.04 cfs 0.303 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.63' Max Vel=0.71 fps Inflow=3.69 cfs 0.303 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=3.54 cfs 0.303 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.29' Max Vel=0.87 fps Inflow=3.95 cfs 0.984 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=3.93 cfs 0.984 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=44.57 cfs 7.626 af
Outflow=44.57 cfs 7.626 af

Reach 122R: ROADWAY GUTTER Avg. Flow Depth=0.40' Max Vel=4.86 fps Inflow=7.01 cfs 0.762 af
n=0.025 L=290.0' S=0.0379 '/' Capacity=10.97 cfs Outflow=6.99 cfs 0.762 af

Reach 123R: CURB ROAD GUTTER Avg. Flow Depth=0.25' Max Vel=4.32 fps Inflow=8.71 cfs 1.139 af
n=0.013 L=80.0' S=0.0200 '/' Capacity=48.18 cfs Outflow=8.71 cfs 1.139 af

Reach 210R: Woods overland Avg. Flow Depth=0.22' Max Vel=2.57 fps Inflow=8.03 cfs 1.284 af
n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=8.02 cfs 1.284 af

Reach 220R: Access Ditch Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.025 L=310.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=0.00 cfs 0.000 af

Reach 221R: Overland Flow Avg. Flow Depth=0.08' Max Vel=2.04 fps Inflow=1.77 cfs 0.378 af
n=0.040 L=180.0' S=0.1111 '/' Capacity=59.50 cfs Outflow=1.77 cfs 0.378 af

Reach 240R: EXISTING CHANNEL Avg. Flow Depth=0.27' Max Vel=4.65 fps Inflow=3.91 cfs 0.983 af
n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=3.90 cfs 0.983 af

Reach 241R: EXISTING CHANNEL Avg. Flow Depth=0.38' Max Vel=6.65 fps Inflow=8.98 cfs 2.268 af
n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=8.95 cfs 2.267 af

Reach 340R: Woodland Flow Avg. Flow Depth=0.21' Max Vel=2.60 fps Inflow=3.93 cfs 0.984 af
n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=3.91 cfs 0.983 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=161.33' Storage=13,782 cf Inflow=9.99 cfs 0.984 af
Outflow=3.95 cfs 0.984 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.88' Storage=1,387 cf Inflow=3.54 cfs 0.303 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=3.04 cfs 0.303 af

Pond 60R: FIELD CB Peak Elev=90.79' Inflow=2.02 cfs 0.140 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=2.02 cfs 0.140 af

Pond 62P: Driveway Culvert Peak Elev=89.88' Storage=1,753 cf Inflow=21.95 cfs 4.211 af
Primary=8.56 cfs 3.382 af Secondary=13.35 cfs 0.829 af Outflow=21.92 cfs 4.211 af

Pond 66P: 24" Cross culvert Peak Elev=88.68' Storage=1,817 cf Inflow=24.07 cfs 4.588 af
Primary=21.46 cfs 4.544 af Secondary=2.33 cfs 0.037 af Outflow=23.78 cfs 4.581 af

Pond 100R: Vortech-DMH2 Peak Elev=110.12' Inflow=13.11 cfs 1.098 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=13.11 cfs 1.098 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=101.50' Inflow=13.11 cfs 1.098 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=13.11 cfs 1.098 af

Pond 102R: DMH1606-DMH9 Peak Elev=94.42' Inflow=13.11 cfs 1.098 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=13.11 cfs 1.098 af

Pond 103R: DMH9-DMH8 Peak Elev=102.54' Inflow=27.40 cfs 2.935 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=27.40 cfs 2.935 af

Pond 104R: DMH8-DMH200 Peak Elev=112.37' Inflow=29.13 cfs 3.082 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=29.13 cfs 3.082 af

Pond 105R: DMH200-OUTLET Peak Elev=99.00' Inflow=29.13 cfs 3.082 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=29.13 cfs 3.082 af

Pond 210P: Sand Filter mc3500 Peak Elev=130.18' Storage=23,017 cf Inflow=18.15 cfs 1.313 af
Outflow=8.03 cfs 1.284 af

Pond 220P: UDF Peak Elev=126.96' Storage=5,960 cf Inflow=4.77 cfs 0.344 af
Primary=1.54 cfs 0.342 af Secondary=0.00 cfs 0.000 af Outflow=1.54 cfs 0.342 af

Total Runoff Area = 24.22 ac Runoff Volume = 8.012 af Average Runoff Depth = 3.97"
72.85% Pervious = 17.64 ac 27.15% Impervious = 6.58 ac

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 11.06 cfs @ 12.13 hrs, Volume= 0.914 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.90	98	IMPERVIOUS
*	0.38	77	WOODS D
*	1.32	80	LAWN D
	2.60	86	Weighted Average
	1.70		65.38% Pervious Area
	0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 1.30 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.04	98	Paved roads Ocean Ave
	0.26	84	1 acre lots, 20% imp, HSG D
	0.30	86	Weighted Average
	0.21		69.33% Pervious Area
	0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D**
					Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035
4.1	235	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11: Sub 11

Runoff = 7.96 cfs @ 12.10 hrs, Volume= 0.596 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	1.04	77	Woods, Good, HSG D
*	0.19	98	Paved roads Ocean Ave
*	0.05	98	Paved roads, Site Drive
	0.02	80	>75% Grass cover, Good, HSG D
	0.29	84	1 acre lots, 20% imp, HSG D
	0.29	87	1/4 acre lots, 38% imp, HSG D
	1.88	82	Weighted Average
	1.47		78.29% Pervious Area
	0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 7.01 cfs @ 12.30 hrs, Volume= 0.762 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	2.01	77	Woods, Good, HSG D
	0.18	80	>75% Grass cover, Good, HSG D
*	0.04	98	Paved roads OCEAN AVE
*	0.07	98	Roofs, OCEAN RIDGE
*	0.05	98	Paved roads Ocean Ridge
*	0.03	77	Woods, Good, HSG D Ocean Ridge
*	0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
	2.61	79	Weighted Average
	2.45		93.87% Pervious Area
	0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.6	330	0.0500	9.46	47.31	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.025 Earth, clean & winding
21.5	710	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 1.50 cfs @ 12.07 hrs, Volume= 0.110 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.18	98	Paved roads Site Drive
	0.09	80	>75% Grass cover, Good, HSG D
	0.27	92	Weighted Average
	0.09		33.33% Pervious Area
	0.18		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
3.6					**Direct Entry, C-D**
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.50 cfs @ 12.07 hrs, Volume= 0.037 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.06	98	Paved roads Site Drive
	0.03	80	>75% Grass cover, Good, HSG D
	0.09	92	Weighted Average
	0.03		33.33% Pervious Area
	0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
4.5					**Direct Entry, C-D**
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 13.85 cfs @ 12.46 hrs, Volume= 1.804 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.64	87	1/4 acre lots, 38% imp, HSG D
	0.12	80	>75% Grass cover, Good, HSG D
*	0.05	98	Roadway, Ocean Ave
	5.55	77	Woods, Good, HSG D
	6.36	78	Weighted Average
	6.07		95.39% Pervious Area
	0.29		4.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 18.15 cfs @ 12.07 hrs, Volume= 1.313 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	1.20	80	>75% Grass cover, Good, HSG D
*	2.11	98	Site Development
	3.31	91	Weighted Average
	1.20		36.25% Pervious Area
	2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 22: Sub 22

Runoff = 3.89 cfs @ 12.07 hrs, Volume= 0.284 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.45	98	Site Development
	0.25	80	>75% Grass cover, Good, HSG D
	0.70	92	Weighted Average
	0.25		35.71% Pervious Area
	0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 23: Sub 23

Runoff = 0.87 cfs @ 12.07 hrs, Volume= 0.060 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 40: Sub 40

Runoff = 3.90 cfs @ 12.13 hrs, Volume= 0.308 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.4	200	0.0750	1.37		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
9.1	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 4.62 cfs @ 12.14 hrs, Volume= 0.377 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.34	77	Woods, Good, HSG D
	0.09	80	>75% Grass cover, Good, HSG D
*	0.03	98	Paved roads Ocean Ave
	0.73	84	1 acre lots, 20% imp, HSG D
	1.19	82	Weighted Average
	1.01		85.21% Pervious Area
	0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.22	98	Roadway
	0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.11	98	IMPERVIOUS
* 0.08	80	LAWN D
0.19	90	Weighted Average
0.08		42.11% Pervious Area
0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn** Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway** Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope** Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.09	98	Roadway
0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow** Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.37	98	IMPERVIOUS
*	0.45	80	LAWN D
	0.82	88	Weighted Average
	0.45		54.88% Pervious Area
	0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD** Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.74	98	IMPERVIOUS
*	0.05	77	WOODS D
*	0.48	80	LAWN D
	1.27	90	Weighted Average
	0.53		41.73% Pervious Area
	0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC** Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:** Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 2.45 cfs @ 12.11 hrs, Volume= 0.189 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.12	98	IMPERVIOUS
*	0.08	77	WOODS D
*	0.38	80	LAWN D
	0.58	83	Weighted Average
	0.46		79.31% Pervious Area
	0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB** Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 4.65" for Cumberland_25 event
Inflow = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af
Outflow = 5.56 cfs @ 12.22 hrs, Volume= 0.492 af, Atten= 7%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.79 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 13.6 min

Peak Storage= 1,192 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 3.31" for Cumberland_25 event
Inflow = 3.90 cfs @ 12.13 hrs, Volume= 0.308 af
Outflow = 3.90 cfs @ 12.13 hrs, Volume= 0.308 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

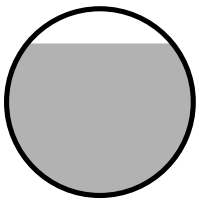
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af
Outflow = 3.04 cfs @ 12.28 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 0.6 min

Peak Storage= 29 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af
Outflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af, Atten= 4%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.71 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 10.1 min

Peak Storage= 574 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
Inflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af
Outflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af, Atten= 0%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 9.8 min

Peak Storage= 680 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.47% Impervious, Inflow Depth > 3.96" for Cumberland_25 event
Inflow = 44.57 cfs @ 12.14 hrs, Volume= 7.626 af
Outflow = 44.57 cfs @ 12.14 hrs, Volume= 7.626 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 122R: ROADWAY GUTTER

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 3.50" for Cumberland_25 event
Inflow = 7.01 cfs @ 12.30 hrs, Volume= 0.762 af
Outflow = 6.99 cfs @ 12.32 hrs, Volume= 0.762 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.86 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 2.8 min

Peak Storage= 418 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.50' Flow Area= 2.0 sf, Capacity= 10.97 cfs

2.00' x 0.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 5.0 '/' Top Width= 6.00'
Length= 290.0' Slope= 0.0379 '/'
Inlet Invert= 106.50', Outlet Invert= 95.50'



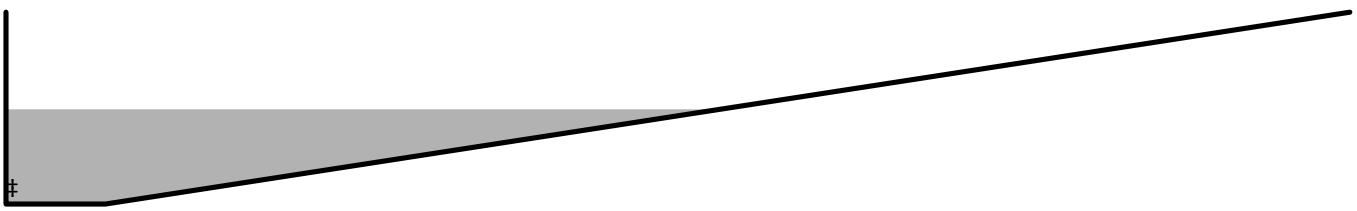
Summary for Reach 123R: CURB ROAD GUTTER

Inflow Area = 3.60 ac, 18.61% Impervious, Inflow Depth > 3.80" for Cumberland_25 event
Inflow = 8.71 cfs @ 12.32 hrs, Volume= 1.139 af
Outflow = 8.71 cfs @ 12.33 hrs, Volume= 1.139 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.32 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.32 fps, Avg. Travel Time= 1.0 min

Peak Storage= 161 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 0.50' Flow Area= 7.3 sf, Capacity= 48.18 cfs

2.00' x 0.50' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 0.0 50.0 '/' Top Width= 27.00'
Length= 80.0' Slope= 0.0200 '/'
Inlet Invert= 95.50', Outlet Invert= 93.90'



Summary for Reach 210R: Woods overland

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth > 4.66" for Cumberland_25 event
Inflow = 8.03 cfs @ 12.23 hrs, Volume= 1.284 af
Outflow = 8.02 cfs @ 12.24 hrs, Volume= 1.284 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.57 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 1.1 min

Peak Storage= 156 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 50.0' Slope= 0.0400 '/'
Inlet Invert= 112.00', Outlet Invert= 110.00'



‡

Summary for Reach 220R: Access Ditch

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 310.0' Slope= 0.0500 '/'
Inlet Invert= 126.00', Outlet Invert= 110.50'



‡

Summary for Reach 221R: Overland Flow

Inflow Area = 0.99 ac, 51.52% Impervious, Inflow Depth > 4.58" for Cumberland_25 event
Inflow = 1.77 cfs @ 12.12 hrs, Volume= 0.378 af
Outflow = 1.77 cfs @ 12.17 hrs, Volume= 0.378 af, Atten= 1%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.04 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 5.0 min

Peak Storage= 156 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 59.50 cfs

10.00' x 0.50' deep channel, n= 0.040 Woods Overland flow
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 180.0' Slope= 0.1111 '/'
Inlet Invert= 120.00', Outlet Invert= 100.00'



‡

Summary for Reach 240R: EXISTING CHANNEL

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
Inflow = 3.91 cfs @ 12.80 hrs, Volume= 0.983 af
Outflow = 3.90 cfs @ 12.84 hrs, Volume= 0.983 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.65 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 4.1 min

Peak Storage= 286 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 340.0' Slope= 0.0529 '/'
Inlet Invert= 128.00', Outlet Invert= 110.00'



‡

Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 5.98 ac, 55.85% Impervious, Inflow Depth > 4.55" for Cumberland_25 event
Inflow = 8.98 cfs @ 12.25 hrs, Volume= 2.268 af
Outflow = 8.95 cfs @ 12.27 hrs, Volume= 2.267 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.65 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.31 fps, Avg. Travel Time= 2.2 min

Peak Storage= 404 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 300.0' Slope= 0.0750 '/'
Inlet Invert= 110.00', Outlet Invert= 87.50'



‡

Summary for Reach 340R: Woodland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
Inflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af
Outflow = 3.91 cfs @ 12.80 hrs, Volume= 0.983 af, Atten= 1%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 14.8 min

Peak Storage= 1,053 cf @ 12.72 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 700.0' Slope= 0.0421 '/'
Inlet Invert= 157.50', Outlet Invert= 128.00'



‡

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
Inflow = 9.99 cfs @ 12.22 hrs, Volume= 0.984 af
Outflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af, Atten= 61%, Lag= 21.4 min
Primary = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 161.33' @ 12.58 hrs Surf.Area= 5,928 sf Storage= 13,782 cf

Plug-Flow detention time= 71.1 min calculated for 0.984 af (100% of inflow)
Center-of-Mass det. time= 70.6 min (880.9 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=3.95 cfs @ 12.58 hrs HW=161.33' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.66 cfs @ 8.46 fps)
- **2=Orifice/Grate** (Orifice Controls 2.08 cfs @ 4.71 fps)
- **3=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.97 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af
Outflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af, Atten= 14%, Lag= 4.1 min
Primary = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 160.88' @ 12.27 hrs Surf.Area= 1,526 sf Storage= 1,387 cf

Plug-Flow detention time= 22.7 min calculated for 0.303 af (100% of inflow)
Center-of-Mass det. time= 22.6 min (827.1 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.04 cfs @ 12.27 hrs HW=160.88' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.04 cfs @ 4.07 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 4.01" for Cumberland_25 event
Inflow = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af
Outflow = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 90.79' @ 12.07 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.02 cfs @ 12.07 hrs HW=90.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.02 cfs @ 3.03 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.76 ac, 29.23% Impervious, Inflow Depth > 3.96" for Cumberland_25 event
Inflow = 21.95 cfs @ 12.39 hrs, Volume= 4.211 af
Outflow = 21.92 cfs @ 12.40 hrs, Volume= 4.211 af, Atten= 0%, Lag= 0.8 min
Primary = 8.56 cfs @ 12.40 hrs, Volume= 3.382 af
Secondary = 13.35 cfs @ 12.40 hrs, Volume= 0.829 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 89.88' @ 12.40 hrs Surf.Area= 3,283 sf Storage= 1,753 cf

Plug-Flow detention time= 0.8 min calculated for 4.210 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (918.3 - 917.5)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.56 cfs @ 12.40 hrs HW=89.88' (Free Discharge)
1=Culvert (Inlet Controls 8.56 cfs @ 4.85 fps)

Secondary OutFlow Max=13.35 cfs @ 12.40 hrs HW=89.88' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 13.35 cfs @ 1.62 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.95 ac, 28.00% Impervious, Inflow Depth > 3.95" for Cumberland_25 event
Inflow = 24.07 cfs @ 12.36 hrs, Volume= 4.588 af
Outflow = 23.78 cfs @ 12.36 hrs, Volume= 4.581 af, Atten= 1%, Lag= 0.0 min
Primary = 21.46 cfs @ 12.36 hrs, Volume= 4.544 af
Secondary = 2.33 cfs @ 12.36 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6
Peak Elev= 88.68' @ 12.36 hrs Surf.Area= 1,850 sf Storage= 1,817 cf

Plug-Flow detention time= 3.3 min calculated for 4.581 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (910.4 - 909.7)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=21.46 cfs @ 12.36 hrs HW=88.68' (Free Discharge)
└**1=Culvert** (Inlet Controls 21.46 cfs @ 6.83 fps)

Secondary OutFlow Max=2.32 cfs @ 12.36 hrs HW=88.68' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.32 cfs @ 1.09 fps)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 4.30" for Cumberland_25 event
Inflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af
Outflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af, Atten= 0%, Lag= 0.0 min
Primary = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 110.12' @ 12.12 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=13.10 cfs @ 12.12 hrs HW=110.12' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.10 cfs @ 7.41 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 4.30" for Cumberland_25 event
Inflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af
Outflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af, Atten= 0%, Lag= 0.0 min
Primary = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 101.50' @ 12.12 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=13.10 cfs @ 12.12 hrs HW=101.50' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.10 cfs @ 7.41 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 4.30" for Cumberland_25 event
Inflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af
Outflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af, Atten= 0%, Lag= 0.0 min
Primary = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 94.42' @ 12.12 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=13.10 cfs @ 12.12 hrs HW=94.42' (Free Discharge)
1=Culvert (Inlet Controls 13.10 cfs @ 7.41 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.76 ac, 28.40% Impervious, Inflow Depth > 4.02" for Cumberland_25 event
Inflow = 27.40 cfs @ 12.12 hrs, Volume= 2.935 af
Outflow = 27.40 cfs @ 12.12 hrs, Volume= 2.935 af, Atten= 0%, Lag= 0.0 min
Primary = 27.40 cfs @ 12.12 hrs, Volume= 2.935 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 102.54' @ 12.12 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=27.38 cfs @ 12.12 hrs HW=102.52' (Free Discharge)
1=Culvert (Barrel Controls 27.38 cfs @ 15.49 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 4.04" for Cumberland_25 event
Inflow = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af
Outflow = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af, Atten= 0%, Lag= 0.0 min
Primary = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 112.37' @ 12.12 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=29.11 cfs @ 12.12 hrs HW=112.34' (Free Discharge)
1=Culvert (Barrel Controls 29.11 cfs @ 16.47 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 4.04" for Cumberland_25 event
Inflow = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af
Outflow = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af, Atten= 0%, Lag= 0.0 min
Primary = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 99.00' @ 12.12 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=29.11 cfs @ 12.12 hrs HW=98.98' (Free Discharge)
1=Culvert (Inlet Controls 29.11 cfs @ 16.47 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 4.76" for Cumberland_25 event
Inflow = 18.15 cfs @ 12.07 hrs, Volume= 1.313 af
Outflow = 8.03 cfs @ 12.23 hrs, Volume= 1.284 af, Atten= 56%, Lag= 9.8 min
Primary = 8.03 cfs @ 12.23 hrs, Volume= 1.284 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 130.18' @ 12.23 hrs Surf.Area= 6,773 sf Storage= 23,017 cf

Plug-Flow detention time= 270.8 min calculated for 1.284 af (98% of inflow)
Center-of-Mass det. time= 257.4 min (1,038.6 - 781.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=8.02 cfs @ 12.23 hrs HW=130.18' (Free Discharge)
└**1=Culvert** (Passes 8.02 cfs of 17.28 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.16 cfs @ 14.55 fps)
  ├**3=Orifice/Grate** (Orifice Controls 4.52 cfs @ 8.46 fps)
  └**4=Sharp-Crested Vee/Trap Weir** (Weir Controls 3.34 cfs @ 1.81 fps)

Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 4.59" for Cumberland_25 event
Inflow = 4.77 cfs @ 12.07 hrs, Volume= 0.344 af
Outflow = 1.54 cfs @ 12.36 hrs, Volume= 0.342 af, Atten= 68%, Lag= 17.1 min
Primary = 1.54 cfs @ 12.36 hrs, Volume= 0.342 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 126.96' @ 12.36 hrs Surf.Area= 3,954 sf Storage= 5,960 cf

Plug-Flow detention time= 277.3 min calculated for 0.342 af (99% of inflow)
Center-of-Mass det. time= 272.4 min (1,056.2 - 783.7)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**4.0" Vert. Orifice/Grate X 4.00** C= 0.600
#5	Device 1	127.00'	**20.0" Vert. Orifice/Grate** C= 0.600
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.54 cfs @ 12.36 hrs HW=126.96' (Free Discharge)
└**1=Culvert** (Passes 1.54 cfs of 6.38 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 9.74 fps)
  │ └**3=Exfiltration** (Passes 0.04 cfs of 0.22 cfs potential flow)
  ├**4=Orifice/Grate** (Orifice Controls 1.49 cfs @ 4.28 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment C

Inspection, Maintenance and Housekeeping Plan

14432

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

Portland Retirement Residence
Portland, ME

Introduction

Upon completion of the proposed development, Hawthorne Development Group, LLC (or a subsidiary of) will be the responsible party for maintaining the stormwater management system. Until such time as the condominium association is established, such as during construction, the developer (Hawthorne Development Group, LLC) shall be responsible 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. <u>Sediment Barriers:</u>

   - 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. Ditches, Swales and Other Open Channels:
      - Inspect ditches, swales, and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to the flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow and repair any erosion of the ditch lining.
      - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
      - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
      - Replace riprap in areas where any underlying filter fabric or underlying gravel is showing through the stone or where stones have dislodged.

   C. Level Lip Spreaders/Ditch Turnouts:
      - The level lip spreader pool shall be inspected after significant rainfall events for sediment accumulation and debris that may reduce its capacity. Sediment and debris buildup shall be removed once the volume of the pool has been reduced by 25%.

- The level lip must be constructed so that runoff flows slowly over the lip to a sheet flow condition through the receiving area. Repair or reconstruction of the level lip is required when the flow from the spreader becomes channelized.
- Do not store snow removed from the street/parking lot within the area of the level spreader.

D. Winter Sanding:
- 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 or other acceptable method.

E. 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

F. Underdrained Subsurface Sand Filter
- Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repaired when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand may need to be replaced every 3 to 5 years.

G. Stormtech Chambers/Isolator Row:
   - Stormtech Chambers shall be inspected and maintained according to manufacturer's recommendations.
   - Recommended maintenance includes, but not limited to, visual inspection of accumulated sediment within isolator row and jet-vac flushing when required.

H. 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.

I. Culverts:
   - Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
   - Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
   - Inspect and repair any erosion damage at the culvert's inlet and outlet.
   - Inspect embankment for erosion, settling, and structural failure.

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

Sample Stormwater Inspection and Maintenance Form

Portland Retirement Residence; Portland, ME
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
Ditches and Swales	Inspect after major rainfall event producing greater than 3" of rain in 2 hours.			
	Repair erosion or damage immediately.			
Catch Basins and Culverts	Remove accumulated sediment and debris			
	Sump depth			
Vegetated Areas	Inspect Slopes			
	Replant Bare Areas			
	Check after Major Storms			
Winter Sanding	Clean annually (Spring)			
	Remove sand and sediment from roadway shoulders			
Level Lip Spreaders	Inspect after significant rainfall			
	Remove sediment if pool volume reduced by 25%			
	Repair the riprap if flow become s channelized			
Subsurface Sand Filter	Inspect system thru inspection ports following major storm event			
	Remove sediment/debris from inlet structure annually			
Underdrained Grass Filter	Inspect inlets/outlets to ensure no blockage from debris			
	Inspect sideslopes annually for erosion, destabilization, and embankment settling.			

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Stormtech	Follow manufacturer's recommendations			

Section 14. Statement of Project's Consistency with City Master Plans

Statement of Project's Consistency with City Master Plans

There are no City of Portland Master Plans for the subject area. Nevertheless, the Portland Retirement Residence is in harmony with the Portland's Comprehensive Plan. Our proposed development addresses the planning goals of the Portland Comprehensive Plan (November 2002, updated 2005) as follows:

Goal "A" – Encourage Orderly Growth

This Development will contribute to the inventory of Senior Housing in the Greater Portland Area. The growing senior demographic both nationally and in Portland and the surrounding area is increasing demand for this and other senior housing options. The proposed site design carefully considers the most efficient layout, emphasizing minimal impact to environmentally sensitive areas.

Goal "B" – Accommodate Anticipated Growth

Senior Housing, as stated in Goal "A", is a critical segment of future housing inventory options for Portland. Our proposed Congregate Care Facility allows for lower impact on traffic, utilities, schools, and other public infrastructures compared with other possible uses for this site.

Goal 'C" – Promote Economic Development

Short Term: The development and construction budget for the proposed Portland Retirement Residence is approximately $18,000,000. A large amount of these funds will be spent locally- hiring local trades and consultants as well as purchasing building materials and services.

Long Term: Upon completion, the Portland Retirement Residence will provide:

18 - Full time employees
17 - Part time employees

Estimated local contributions annually:

Wages, taxes and benefits costs of approximately $675,000
Expenditures for energy and utility cost of approximately $175,000
Local contracts for services and supplies estimated at $36,000.
Properly Tax contribution $280,000

Goal "D" –Encourage Decent Housing

The Portland Retirement Residence will meet the "wide variety of new housing" recommendation as called out in Goal "D". It also addresses the policy objective of "insuring a diverse mix of housing types that offers a continuum of options" and the goal to Identify vacant and redevelopment land opportunities throughout the city to facilitate the construction of new housing".

More specifically, this site will address a portion of item viii: "Housing with a range of services and medical support for the elderly and special needs population, including assisted living, congregate care, group homes and nursing homes".

Goal "E" – Protect Water Resources

The design of the onsite stormwater facilities will serve to protect water resource areas from increased or negative impact. Sanitary Sewer outflow volumes are much less that other possible development on this site, creating less overall impact that other allowed uses.

Goal "F" – Protect Critical Natural Resources

The site design protects the onsite natural resources, by:

A) Setting aside over 8 acres under a ROS, Residential Open Space zoning designation
B) Minimizing the building footprint and hard surfaces to avoid wetlands and other sensitive areas
C) Site design allows for approximately 84% of the site to stand as landscaped and open spaces, providing ample opportunity and protection for flourishing wetlands, wildlife and natural resources.

Goal "G" – Protect Marine Resources

The location of this site does not create any direct impact on local marine resources. The onsite stormwater facilities will include pretreatment features to stormwater discharge lessening any downstream impact on Casco Bay.

Goal "H" – Safeguard Agricultural and Forrest Resources

The ROS zoning designation as well as the substantial amount of open and landscape areas of the overall site contributes to further safeguarding the forest resources on the site.

Goal "I" – Protect Historic and Archeological Resources

As a part of the early development process we have contacted the Maine Historical Commission and confirmed that this site does not have any historical or archeological significance. Note: Near the north central portion of the site a USGS Reference Disk and two additional reference markers are located. These are identified as the "West Graves" USGS marker. The site design will leave this area untouched but accessible.

Goal "J" – Promote Outdoor Recreation

The ROS zoned portion of the site (8.16 acres) establishes over 45% of the Portland Retirement Residence site as undisturbed open space for future recreational opportunities.

Compatibility with the Portland Comprehensive- Summary:

Our Congregate Care Facility will be an important part of future housing in the Greater Portland area. The Portland Retirement Residence uses careful site placement to complement the surrounding community and to co-exist with the natural environment. Additionally, it meets housing needs for local seniors and contributes to the local economy.

Statement of Solid Waste Generation

Upon completion of construction, the project will have a trash compactor and recycling program including waste oils and greases from meal preparations.

A. Estimated Quantities of Solid Waste

The proposed 150-suite facility is expected to generate average quantities of waste as follows:

Construction Phase: The site is primarily wooded and construction of the proposed development will require clearing that will generate stumps and grubbings. Stumps and grubbings 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.

Type	Estimated Quantity
Stumps/Grubbings (assume 4.93 ac @ 400 CY/ac.)	1,972 CY
Construction debris (assume 20 CY/wk for 16 months1 year)	1,400 CY

Municipal Solid Waste:

Type	Estimated Quantity
Normal residential waste (assume 2 ½ CY/month/unit)	375 CY/month

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 grubbings will be chipped or ground on site. The grindings will be used for erosion control mulch whenever possible.

D. **Special or Hazardous Waste**

Oils used in cooking are separated and stored for recycling by a commercial recycling company. Furthermore, kitchen waste lines will be treated through the use of an on-site grease trap.

No Hazardous Waste will used or generated by this facility.

Section 15. Ability to Serve Letters

- Portland Water District
- City of Portland Public Services – Sewer Division

Portland Water District
FROM SEBAGO LAKE TO CASCO BAY

December 9, 2014

Sebago Technics
75 John Roberts Road – Suite 1A
South Portland, ME 04106-6963

RECEIVED
DEC 11 2014
SEBAGO TECHNICS

Attn: Robert A. McSorley, P.E.
Re: Casco Heights; Ocean Avenue, Portland
Ability to Serve with PWD Water

Dear Mr. McSorley:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on November 20, 2014. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter.

Please note that this letter does not constitute approval of this project from the District. Review and approval of final plans will be required. Please review this letter for any special conditions specified by the District and to determine the appropriate next steps to take to move your project through the submittal and approval process.

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 a 12-inch diameter cast iron water main on the west side of Ocean Avenue and a public fire hydrant located 305-feet from the site.

The current data from the nearest hydrant with flow test information is as follows:

Hydrant Location:	Ocean Avenue 1000' northeast of Ashley Lane
Hydrant Number:	POD-HYD01222
Last Tested:	9/30/2003
Static Pressure:	68 psi
Residual Pressure:	64
Flow:	1,221 GPM

Public Fire Protection

You have not indicated whether this project will include the installation of new public hydrants to be accepted into the District water system. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

225 DOUGLASS STREET P.O. BOX 3553 PORTLAND, MAINE 04104-3553
PHONE: 207.774.5961 FAX: 207.761.8307 WEB: WWW.PWD.ORG

Domestic Water Needs

The ability to serve request indicated that the anticipated water usage for the 142 unit condominium subdivision is 9,540 gallons per day. The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project.

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 insufficient for their needs, please contact the MEANS group to request a hydrant flow test and we will work with you to get more complete data.

Conditions of Service

We have reviewed the Overall Site Plan dated March 24, 2014 for the Casco Heights project. Since each of the 142 units is located within a single parcel, the District would prefer not to own and maintain water mains, hydrants and a water pump station serving a private development. We suggest a water service configuration consisting of either separate fire and domestic services or a single combined fire and domestic service with a fire line meter. Either of these scenarios would only have one meter and one District account. The condo/homeowner association may choose to install private meters for each unit in order to split the bill proportionately.

As your project progresses, we advise that you submit any design plans to the MEANS group for review of the water service line configuration. We will work with you to ensure that the design meets our current standards. If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Gordon Johnson, P.E..
Engineering Services Manager

Portland, Maine | Yes. Life's good here.

Michael J. Bobinsky
Director of Public Services

25 November 2014

Robert A. McSorley, P.E.,
Sebago Technics Inc.,
95 John Roberts Road, Suite 1A,
South Portland, Maine 04106

RE: The Capacity to Handle Wastewater Flows, from a Proposed One Hundred and Forty Two Retirement Residences at a Congregate Care Facility

Dear Mr. McSorley:

The existing eight inch diameter, reinforced concrete, sewer pipe, located in Ocean Avenue, has adequate capacity to **transport,** while The Portland Water District sewage treatment facility, located off Marginal Way, has adequate capacity to **treat,** the total net increase in anticipated wastewater flows of **9,540 GPD**, from this proposed project.

Anticipated Wastewater Flows from the Proposed Commercial Units:	
128 One Bedroom Suites x 60 GPD	= 7,680 GPD
14 Two Bedroom Suites x 120 GPD	= 1,680 GPD
2 Full-time Manager Units x 90 GPD	= 180 GPD
Total Net Increase in Proposed Wastewater Flows for this Project	= **9,540 GPD**

In order to offset any increase in sanitary flows, the City combined sewer overflow (C.S.O.) abatement consent agreement (with the U.S.E.P.A., and with the Maine D.E.P.) requires C.S.O. abatement, as well as storm water mitigation, from all projects. If the City can be of further assistance, please call 874-8832.

Sincerely,
CITY OF PORTLAND

David Margolis-Pineo
Deputy City Engineer

DMP

CC: Jeffrey Levine, 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
Jean Fraser, Planner, Department of Planning, and Urban Development, City of Portland
Frank Brancely, Senior Wastewater Technician, City of Portland
Michael Farmer, P.E., Project Engineer, City of Portland
Bradley A. Roland, P.E., Environmental Projects Engineer, City of Portland
Benjamin N. Pearson, E.I., Industrial Pretreatment Coordinator, City of Portland
John Emerson, Wastewater Coordinator, City of Portland
Rhonda Zazzara, Field Inspection Coordinator, City of Portland
Jane Ward, Administrative Assistant, City of Portland

Section 16. Statement of Solid Waste Generation

Statement of Solid Waste Generation

Upon completion of construction, the project will have a trash compactor and recycling program including waste oils and greases from meal preparations.

A. Estimated Quantities of Solid Waste

The proposed 150-suite facility is expected to generate average quantities of waste as follows:

Construction Phase: The site is primarily wooded and construction of the proposed development will require clearing that will generate stumps and grubbings. Stumps and grubbings 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.

Type	Estimated Quantity
Stumps/Grubbings (assume 4.93 ac @ 400 CY/ac.)	1,972 CY
Construction debris (assume 20 CY/wk for 16 months1 year)	1,400 CY

Municipal Solid Waste:

Type	Estimated Quantity
Normal residential waste (assume 2 ½ CY/month/unit)	375 CY/month

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 grubbings will be chipped or ground on site. The grindings will be used for erosion control mulch whenever possible.

D. **Special or Hazardous Waste**

Oils used in cooking are separated and stored for recycling by a commercial recycling company. Furthermore, kitchen waste lines will be treated through the use of an on-site grease trap.

No Hazardous Waste will used or generated by this facility.

Section 17. NFPA 1/Fire Department Standards

NFPA 1/Fire Department Standards

The proposed building will be sprinkled in accordance with NFPA 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 20' wide of clear paved accessed access to entire developed portion of the property with most of the accesses being 24' wide including the main access road. T-turnarounds have been provided at the parking area access off the main access road and the delivery area/dumpster area to the rear of the building. With radii of 30' and 35', these locations provide ample room for maneuvers of the City's fire fighting apparatus.

The porte-cochere at the entrance to the building will provide clear vertical clearance in excess of 13' 6".

Section 18.3 Water Supplies

The project will connect to the existing 12" water main on Ocean Avenue and extend an 8" main to the building for fire protection and domestic flows. Because of the height differential of the site and the exiting capacity of the 12" water main, a booster pump system will be constructed at the project's to provide the necessary flows/pressures during the higher flows necessary for fire protection.

Section 18.4 Fire Flow Requirements for Buildings

The proposed booster pump system will provide 1,900 gpm at adequate pressure which equates to the required fire flow for a sprinkled, IBC Type V-A building construction and the peak domestic flow for the project.

Section 18.5 Fire Hydrants

A fire hydrant is provided off the northeast corner of building along the front access road. A fire department connection will be provided within 50' of the fire hydrant as shown on the proposed Utility Plan.

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 of Section 14-526:

(a) Transportation Standards

1. Impact on Surrounding Street Systems

   The segment of Ocean Avenue to which the project accesses is currently not operating at over capacity. Based upon the 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.

2. Access and Circulation

   The project provides adequate access and internal circulation. The location of the driveway has been chosen to minimize the slope of the access road, 3.5% at the connection and approximately 5.0% up to the building/parking areas of the site. The site access is located approximately at the crest of Ocean Avenue on the outside of a slight curve in the roadway to the east. The design speed of Ocean Avenue in this location is 35 mph. Sight distance from this access location to the south is well over the 305 feet listed for this speed in the Maine Department of Transportation Entrance Rules. Sight distance to the north extends down to the entrance to Summer Place which is approximately 600' from the proposed entrance.

   The traffic from this project is not expected to have an impact on adjacent driveways or street connections as the peak trips would be at a different time from these other access locations.

3. Public Transit Access

   The project is not located on a local or minor arterial roadway as shown n the City's Federal Street Classification Map. Nevertheless, the project will provide bus shuttle serviced for its residents to shopping, doctor appointments, volunteer activities, etc.

4. Parking

   The project provides more than adequate parking as shown in the zoning Assessment Section. Because of the elderly nature of the project's resends, the applicant is requesting a waiver for required bicycle parking.

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features

   No specific habitats or natural features were noted in our coordination with the Departments of Conservation and Inland Fisheries. Nonetheless, there is substantial portion of the property (8.16 acres) that is being maintained in the R-OS zoning in its current nature state.

2. Landscaping and Landscape Preservation

   Of the 10.17 acres of the development property, only 4.93 acres will be impacted with the creation 2.86 acres of impervious area. The remaining property will remain in its current nature state. This preservation includes significant buffers including understory vegetation from neighboring properties.

   The project proposes a substantial site landscaping plan to enhance the developed portion of the site and to blend the development with the natural surroundings. This includes interior islands within the parking areas, street trees along the entrance roadway and numerous canopy and evergreen trees throughout the developed portion of the property.

3. Water Quality, Stormwater Management and Erosion Control

   The project is designed to meet the current Chapter 500 Standards of Maine Stormwater Law as recently updated by the Maine Department of Environmental Protection. Please refer to the Stormwater Section of this submission.

(c) Public Infrastructure and Community Safety Standards

1. Consistency with City Master Plans

   There are no known master plans for this area. Project is consistent with the Comprehensive Plan, see section on Statement of Project's Consistency with City Master Plans.

2. Public Safety and Fire Prevention

   The site is proposed with limited access and for areas to be observable form the central building of the site. The site proposes accesses that meet the requirements for emergency vehicles including access way width, minimum height clearance and adequate maneuvering. The project will connect to the existing 12" water main on Ocean Avenue, provide a booster pump system to provide adequate fire flow, and hydrant and fire development connections for fire protection systems.

3. Availability and Adequate Capacity of Public Utilities

The project will connect to the existing public water and sanitary systems. Adequate public utilities exist for the project, please see enclosed letters from the Portland Water District and the City's Public Services Department relative to sewer. The applicant has also coordinated with Central Maine Power, Unitil and telcomm/cable providers.

(d) Site Design Standards

1. Massing, Ventilation and Wind Impact

   The proposed building is sufficiently setback from property lines and adjacent neighboring buildings such that the building will have minimum adverse effects on these adjacent facilities. The project uses individual heating/cooling systems for the suites that do not produce emissions. Other mechanical equipment will be located away from property lines and meet the applicable state and federal emission standards.

2. Shadows

   The proposed building is such that the highest elevations will; be at approximately the same elevations as the nature canopies on the site at the proposed location of the building . Based upon the nature of the sun position in Maine, it is expected that the greatest impacts from shadows would be to the west, north and east of the building. In each of the these directions, because of the proposed height being at about the height of the natural canopies and the placement of the building, the building will not cast significant shadows onto to neighboring properties.

3. Snow and Ice Loading

   Snow storage areas are shown of the proposed site plan. As the project will retain the services of a commercial landscaping maintenance company, it is anticipated that snow management will be provided by the same company. If snow amount exceeds the ability of the site to retain it, the maintenance company will be engaged to remove excess snow from the property.

4. View corridors

   Based upon the proposed height of the building and the amount of natural vegetation that exists, the project will not affect any existing view corridors.

5. Historic Resources

   Coordination with the Maine State Historical Preservation Office did not note any adjacent or on-site historical resources will be impacted by the development.

6. Exterior Lighting

All site lighting will be energy efficient LED fixtures. All general lighting for the site areas will be cut off type fixtures. All up-lighting of architectural features and landscaping will comply with Section 12 of the Technical Manual.

7. Noise and Vibration

   The individual nature of the heating/cooling elements for the suite are chosen based upon the minimum noise/sounds from vibration that they produce. Because of the individual units of the suites, the mechanical facilities for the common areas are smaller than for a similar sized building and are isolated away from the adjacent property lines.

8. Signage and Wayfinding

   The project will provide identification sign along the Ocean Avenue frontage at the project's entrance. Signage will meet the requirements of the City's code relative to size, scale, proportions, design, materials, placements and lighting.

9. Zoning Related Design Standards

   There are no other known zoning related design standards that affect the property.

Section 19. Manufacturer's Verification on Mechanical Equipment

Manufacturer's Verification on Mechanical Equipment

The applicant proposes to utilize energy efficient products throughout the building design. The individual suites have independent heating/cooling units that produce no emissions. Other mechanical equipment for common areas and the site emergency generator are smaller systems relative to the size of the building, located in isolated areas and will meet the applicable emission standards. Document has been requested from the manufacturer(s) and will be provided under separate cover to the City.

Section 20. Soils Report

REPORT

January 16, 2015
14-1188 S

Geotechnical Engineering Services

Proposed Retirement Residence
802 Ocean Avenue
Portland, Maine

PREPARED FOR:
Hawthorn Development, LLC
c/o Lenity Architecture
Attention: Mark Lowen
3150 Kettle Court SE
Salem, Oregon 97301

PREPARED BY:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
207-657-2866

S.W.COLE ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing*
- *GeoEnvironmental Services*
- *Ecological Services*

www.swcole.com

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Attachment A	Limitations
Sheet 1	Exploration Location Plan
Sheets 2 to 14	Boring Logs
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14-1188 S

January 16, 2015

Hawthorn Development, LLC
c/o Lenity Architecture
Attention: Mark Lowen
3150 Kettle Court SE
Salem, Oregon 97301

Subject: Geotechnical Engineering Services
Proposed Retirement Residence
802 Ocean Avenue
Portland, Maine

Dear Mark:

In accordance with our Revised Proposal dated November 11, 2014, we have performed subsurface explorations for the subject project in Portland, Maine. This report presents our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Attachment A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations, earthwork and pavement associated with the proposed construction. Our scope of services included review of existing subsurface information, drilling test boring and auger probe explorations, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Proposed Construction

Based on the site plan dated October 28, 2014 and the RFP dated October 29, 014, we understand development plans call for construction of a new retirement residence with associated paved access drive and parking areas on an undeveloped parcel located at

802 Ocean Avenue in Portland, Maine. We understand the residence will be four-story with 142 suites and will consist of wood-framed construction.

The building will have a finish floor elevation of 145 feet (project datum) requiring cuts in the west side of the footprint and fills in the east side of the footprint approaching 10 to 12 feet. Additionally, cuts and fills approaching about 15 feet will be required to achieve proposed site grades in paved parking and access drive areas. Two detached garages are proposed south and southeast of the main building.

Proposed and existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

2.0 EXPLORATION AND TESTING

2.1 Explorations

We performed thirteen explorations for the subject project as well as a review of explorations performed at the site for a previous development proposal. The approximate exploration locations are shown on the "Exploration Location Plan" attached as Sheet 1. Logs of the recent explorations are attached as Sheets 2 through 14. A key to the notes and symbols used on the log is attached as Sheet 15. Logs of the previous explorations are attached as Appendix A.

2.1.1 Recent Explorations

Five test borings (B-101 through B-105) and eight auger probes (P-201 through P-208) were made at the site on November 22, 2014, by Northern Test Boring, Inc of Gorham, Maine working under subcontract to S. W. Cole Engineering, Inc. (S.W.COLE). Bedrock was encountered at the ground surface at B-103 and P-208. The exploration locations were selected and established in the field using a Trimble GPS by S.W.COLE.

2.1.2 Previous Explorations

Seventeen test borings (B-1 through B-17) and eight auger probes (P-1 through P-8) were made at the site in 2004 for a previous development proposal.

2.2 Testing

The explorations were made using cased wash-boring, rock coring, solid stem auger, and air hammer drilling techniques. The soils were sampled at the test borings using a split spoon sampler and Standard Penetration Test (SPT) methods. SPT blow counts are shown on the logs. Soil and bedrock samples obtained from the explorations were returned to our laboratory for visual classification.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Surficial Conditions

The site is located at 802 Ocean Avenue in Portland, Maine. The site consists of an undeveloped wood parcel located on the west side of Ocean Avenue. Bedrock outcrops are present across the site. The site generally slopes down to the east with existing topography varying from about elevation 160 to 125 feet within the footprint of proposed construction and elevation 140 to 115 feet along the proposed access drive. Some shallow drainage channels and lower laying areas of ponded water are present at the site, with flow generally draining to the east and southeast. A wetland is present in the northwestern limits of the site, which appears to feed shallow drainage channels. Existing site features and topography are shown on Sheet 1.

3.2 Subsurface Conditions

Underlying a surficial layer of forest duff and topsoil, the explorations generally encountered a thin layer of silty sand and/or silty glacial till overlying shallow bedrock. Bedrock was encountered at the explorations at depths varying from about ½ to 5 feet. The drilling equipment penetrated into an upper zone of weathered bedrock at some exploration locations. Based on rock coring performed as part of the 2004 exploration program, the bedrock is classified as migmatite and biotite-muscovite schist of varying quality. Refer to the attached logs for more detailed subsurface information.

3.3 Groundwater Conditions

The overburden soils encountered at the explorations were generally moist to saturated. Groundwater monitoring wells were installed in several borings made for the 2004 exploration program. Details of these monitoring wells are shown on the borings logs attached in Appendix A. Groundwater measurements obtained at the wells in January, 2005 are as follows:

Boring	Water Depth From Existing Ground Surface (ft)
B-2	4.1 Below
B-4	1.7 Above (Possible Artesian Condition)
B-8	0.5 Above (Possible Artesian Condition)
B-12	0.1 Above (Possible Artesian Condition)
B-16	3.0 Below
B-17 (Shallow)	2.7 Below
B-17 (Deep)	1.1 Above (Possible Artesian Condition)

An attempt was made to locate the monitoring wells at the site during the recent exploration program; however the wells had either been destroyed or were frozen, hindering measurement. Groundwater likely becomes perched on top of the shallow bedrock at the site. It should be anticipated that seasonal groundwater levels will fluctuate, especially during periods of snowmelt and precipitation.

3.4 Seismic and Frost Considerations

The 100-year Air Freezing Index for the Portland, Maine area is about 1,410-Fahrenheit degree-days, which corresponds to a frost penetration depth on the order of 4.5 feet. Based on the findings at the explorations, we interpret the site soils and bedrock to correspond to Seismic Site Class C in accordance with 2009 IBC/ASCE-7.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. Specifically, conventional spread footings and on-grade floor slabs appear suitable for the proposed buildings. The principle geotechnical considerations are as follows:

- Shallow bedrock is present across the site. The bedrock will require blasting to achieve proposed site grades. Blasting and subsequent preparation of blasted bedrock subgrades must be performed in a controlled manner to provide adequate support of the proposed buildings and pavements. Subgrades should be observed by the geotechnical engineer and may need to be overexcavated and replaced as

deemed necessary. Blasted bedrock subgrades must be thoroughly choked with Crushed Stone or blasted bedrock fines.

- Possible artesian groundwater conditions were observed in the monitoring wells. Groundwater seepage in anticipated from cut slopes. A continuous Crushed Stone Drainage blanket with perimeter underdrains is recommended below the entire building.

- Blasted bedrock may be processed on-site to reuse for compacted fills as well as pavement gravels and foundation backfill. The contractor should be prepared to break down larger rock particles as needed to meet the requirements of Rock Borrow, Structural Fill, Pavement Gravel and Crushed Stone. Some imported materials will be needed for construction.

- A sub-slab radon venting system must be installed beneath building. The radon system should be designed by a qualified indoor air quality consultant.

4.2 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion.

Following stripping and grubbing of the site, blasting will be required to achieve proposed grades. Blasting and subsequent preparation of blasted bedrock subgrades must be performed in a controlled manner to provide adequate support of the proposed buildings and pavement. Care must be taken to control overblasting below buildings and paved areas. We recommend vertical overblasting be limited to 1-foot below footings and 2-feet below slabs and paved areas.

S.W.COLE should observe blasted bedrock subgrades prior to placing any new fill or concrete. Depending how the rock fractures, some overblasted rock may be able to remain in place; however, the contractor should be prepared to overexcavate and remove loose and overblasted bedrock as deemed necessary by the geotechnical engineer's field observations. We recommend the contract documents contain unit rate provisions for

removal and replacement of overblasted bedrock. Blast rock fines or Crushed Stone should be thoroughly worked into the bedrock surface to choke any voids or fractures in the bedrock.

4.3 Excavation and Dewatering

Excavation work will generally encounter topsoil, a relatively thin layer of silty sand and silty glacial till and shallow bedrock. Final cuts to subgrade elevation in soil, if encountered, should be performed with a smooth-edged bucket to help minimize soil disturbance.

The bedrock encountered at the site is hard and sound and will require blasting for excavation. Blasting can adversely affect adjacent structures, water-wells, septic systems, up-gradient wetlands, and buried utilities. We recommend that blasting be performed by a licensed and qualified contractor and that a blasting plan be prepared sufficiently in advance of blasting activities to coordinate efforts with abutting properties and to serve notice to the general public. Pre-blast surveys of structures, wells, septic systems, pipelines, and protected natural resources within 500 feet of the blast area should be completed prior to blasting.

Groundwater seepage is anticipated in excavations. Sumping and pumping dewatering techniques should be adequate to control groundwater in shallower excavations. The layer of Crushed Stone recommended below foundations will provide a media from which to dewater. Controlling the water levels to below planned excavation depths will help stabilize subgrades during construction.

Excavations must be properly shored and/or sloped to prevent sloughing and caving of the sidewalls during construction. Temporary excavations should be sloped or shored in accordance with OSHA regulations.

4.4 Foundations

We recommend the proposed buildings be supported on spread footing foundations bearing on at least 12-inches of Crushed Stone overlying properly prepared subgrades. Building subgrades are anticipated to consist of blasted bedrock in the western portion of the footprint, transitioning to compacted Rock Borrow fill in the east.

For spread footings bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

Geotechnical Parameters for Spread Footings and Foundation Walls	
Design Frost Depth	4.5 feet
Net Allowable Bearing Pressure	4.0 ksf or less
Base Friction Factor	0.4
At-Rest Lateral Earth Pressure Coeff.	0.5
Total Unit Weight of Backfill	130 pcf
Internal Friction Angle of Backfill	30 degrees
Seismic Soil Site Class	C (2009 IBC/ASCE 7)

For the anticipated foundation bearing conditions, we anticipate less than 1-inch of post-construction settlement with differential settlement approaching ½-inch.

4.5 Foundation Drainage

We recommend a perimeter foundation underdrain system be installed beneath the building. The underdrain pipe should consist of 4-inch diameter, perforated SDR-35 foundation drain pipe enveloped within the exterior side of the Crushed Stone provided below the footings. Non-woven geotextile, such as Mirafi 140N or equivalent, should be provided around the exterior side of the Crushed Stone layer prior to placing foundation backfill soils. The underdrain pipe must be connected to a positive gravity outlet protected from freezing, clogging and backflow. The Crushed Stone layer provided below the building footings and floor slabs should be continuous and hydraulically connected to the underdrains. General underdrain details are shown on Sheet 16.

4.6 Slab-On-Grade Floors and Soil-Gas Venting

We recommend on-grade concrete floors be supported on a minimum of 12 inches of compacted Crushed Stone overlying properly prepared subgrades. On-grade floor slabs founded on properly prepared subgrades may be designed considering a modulus of subgrade reaction of 100 pci. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

The presence of shallow bedrock beneath the proposed building increases the risk of radon intrusion in the building. Consequently, building design must include a sub-slab

radon venting system and positive building pressurization. The venting system should be designed by a qualified indoor air quality consultant.

We recommend a sub-slab vapor retarder overlying at least 1-inch of rigid insulation overlying the 12 inch thick Crushed Stone venting and drainage layer below on-grade floor slabs. The vapor retarder must have a permeance that is less than the floor cover or surface treatment that is applied to the slab. The vapor retarder must have sufficient durability to withstand puncture from construction activity. The vapor retarder material shall be placed according to the manufacturer's recommended method, including the taping and lapping of all joints and wall connections. The architect and/or flooring consultant should select the vapor retarder products compatible with flooring and adhesive materials.

The floor slab should be appropriately cured using moisture retention methods after casting. Typical floor slab curing methods should be used for at least 7 days. The architect or flooring consultant should assign curing methods consistent with current applicable American Concrete Institute (ACI) procedures with consideration of curing method compatibility to proposed surface treatments, flooring and adhesive materials.

4.7 Entrance Slabs and Sidewalks

Entrance slabs and sidewalks adjacent to buildings must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend that clean, non-frost susceptible Structural Fill be provided to a depth of 4.5 feet (or until sound bedrock is encountered) below the top of entrance slabs. This thickness of Structural Fill should extend the full width of the entrance slabs and outward at least 4.5 feet, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement subbase gravel at a 3H:1V or flatter slope. General frost transition zone details for entrance slabs are illustrated on Sheet 16.

4.8 Backfill and Compaction

Based on the subsurface findings, the existing site soils are unsuitable for reuse as fill within building areas, but may be reused in paved areas during dry, non-freezing weather conditions. We recommend the following fill and backfill materials.

Granular Borrow: Imported compacted fill to raise site grades in paved areas should be sand, silty sand or sand and gravel meeting the requirements of MDOT Standard Specification 703.19 “Granular Borrow”.

Rock Borrow: Blasted bedrock fill to raise site grades in building and paved areas should be processed to meet the requirements of MDOT Standard Specification 703.21 “Rock Borrow” with a maximum particle size of 3 feet in greatest dimension. The maximum particle size of Rock Borrow should be limited to 4-inches in the top 5 feet below the building.

Structural Fill: Fill to raise site grades in the top 5 feet below the building, over wet subgrades, backfill for foundations and retaining walls, and backfill below exterior slabs and patios should be non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below.

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
#40	0 to 30
#200	0 to 5

Structural Fill is recommended for use as:

- Fill to raise site grades over wet subgrades
- Backfill for foundations
- Fill and backfill below exterior patios and slabs to at least 4.5 feet below finish grade, or until sound bedrock is encountered

Crushed Stone: Crushed Stone, used below building footings and floor slabs should meet the gradation requirements of MDOT Standard Specifications 703.22 “Underdrain Backfill Type C”. A nominally sized 3/4-inch crushed stone will meet this requirement.

Reuse of Existing Soils and Bedrock: The existing site overburden soils are moisture and frost susceptible and are unsuitable for reuse in the building area, but may be

reused to raise grades in landscape and paved areas during dry and non-freezing conditions.

Blasted bedrock may be reused to raise site grades provided it is processed to meet the requirements of Rock Borrow. Additionally, blasted bedrock may be processed on-site and blended with sand to create Structural Fill and pavement gravels.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose soil lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that soil fill and backfill in building and paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557.

Rock Borrow should be placed in lifts not exceeding 3 feet and compacted and choked with Crushed Stone or blast fines such that voids are filled within the Rock Borrow mass prior to placing the next lift. Rock borrow lifts should be compacted with at least 3 passes each way of a vibratory roller having a static weight of at least 12-tons.

4.9 Weather Considerations

Considering the site is principally shallow rock, blasting and site grading with Rock Borrow may occur in variable weather conditions. Site grading with soil fills should ideally be performed in drier, non-freezing weather. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Concrete and fill must not be placed on frozen soil; and once placed, the concrete and soil beneath the structure must be protected from freezing.

4.10 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light delivery truck traffic with occasional heavy delivery truck traffic. Considering the site soils, and proposed usage, we offer the following pavement section for consideration. Materials are based on Maine Department of Transportation 2014 Standard Specifications.

Asphalt Pavement Section	
Material	**Thickness (Inches)**
9.5 mm Hot Mix Asphalt (50 Gyration Design)	1 ¼
19.0 mm Hot Mix Asphalt (50 Gyration Design)	2 ¼
MDOT 703.06 Type A, Crushed Aggregate Base	3
MDOT 703.06 Type D, Crushed Aggregate Subbase	15

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. In the absence of full depth excavation of frost susceptible soils below paved areas and subsequent replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.11 Fill Slopes and MSE Walls

Fill slopes should be constructed of properly compacted Rock Borrow or Granular Borrow overlying bedrock. The slopes should be constructed as oversized level benches to facilitate proper compaction which are then excavated to grade. Vegetation should be established on the slopes as soon as practicable. Temporary erosion control mesh or other means may be needed to stabilize the slopes during construction.

We understand mechanically stabilized earth walls (MSE Walls) may be needed for site grading. We recommend the following geotechnical parameters for design of MSE Walls:

Geotechnical Parameters for MSE Walls		
Wall Zone	**Unit Weight (pcf)**	**Friction Angle**
Reinforced Soil	130	32
Retained Soil	135	30
Foundation Soil	125	28

S.W.COLE should be retained to review MSE Wall designs and perform a global stability analysis of MSE Walls, as well as cut and fill slopes.

4.12 Design Review and Construction Testing

S.W.COLE should be retained to review the final design and specifications to determine that our earthwork, foundation and pavement recommendations have been properly interpreted and implemented.

A construction materials testing and special inspection program should also be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to provide pre-blast surveys, subgrade observations for foundations as well as testing and special inspection services for soils, concrete, asphalt, steel, and spray-applied fireproofing construction materials.

5.0 CLOSURE

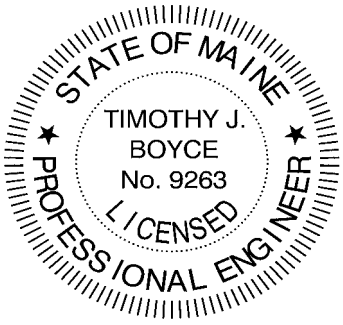
It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

S. W. Cole Engineering, Inc.

Evan M. Walker, P.E.
Geotechnical Engineer

Timothy J. Boyce, P.E.
Senior Geotechnical Engineer



EMW:tjb-mas

Attachment A
Limitations

This report has been prepared for the exclusive use Hawthorn Development, LLC and Lenity Architecture for specific application to the proposed Retirement Residence at 802 Ocean Avenue in Portland, Maine. S. W. Cole Engineering, Inc. has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S. W. Cole Engineering, Inc.'s scope of work has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S. W. Cole Engineering, Inc. should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S. W. Cole Engineering, Inc.

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-101**
SHEET: 1 OF 1
PROJECT NO.: 14-1188

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
ALL SOILS MOIST

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	1D	8"	4"	0.6'	1	50-2"			0.6'	FOREST DUFF
									0.9'	WEATHERED BEDROCK - ADVANCE BY AUGER
										REFUSAL @ 0.9'
										BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-101**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-102**
SHEET: 1 OF 1
PROJECT NO.: 14-1188

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.4'	FOREST DUFF
	1D	14"	14"	1.2'	1	2	50-2"		1.0'	DARK BROWN SILTY SAND WITH ORGANICS
									1.2'	WEATHERED BEDROCK - ADVANCE BY AUGER
										REFUSAL @ 1.2'
										BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-102**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-103**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:				
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										BEDROCK AT GROUND SURFACE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-103**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-104**
SHEET: 1 OF 1
PROJECT NO.: 14-1188

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
ALL SOILS MOIST

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	1D	8"	8"	1.6'	13	50-2"			0.2'	FOREST DUFF / DARK BROWN SILTY SAND WITH ORGANICS
									1.1'	WEATHERED BEDROCK - ADVANCE BY AUGER
										REFUSAL @ 1.1'
										BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-104**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-105**
SHEET: 1 OF 1
PROJECT NO.: 14-1188

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

WATER LEVEL INFORMATION
ALL SOILS MOIST

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	1D	10"	8"	0.8'	2	50-4"			0.4'	FOREST DUFF
									0.8'	DARK BROWN SILTY SAND WITH ORGANICS
									1.8'	WEATHERED BEDROCK - ADVANCE BY AUGER
										REFUSAL @ 1.8'
										BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-105**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **P-201**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF
									1.2'	DARK BROWN SILTY SAND WITH ORGANICS
										REFUSAL @ 1.2'
										BEDROCK
										NOTE: NO SAMPLING - AUGER PROBE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-201**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **P-202**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF
										ORANGE-BROWN SILTY SAND
									2.6'	
									3.1'	WEATHERED BEDROCK
										REFUSAL @ 3.1'
										BEDROCK
										NOTE: NO SAMPLING - AUGER PROBE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-202**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **P-203**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF
									2.0'	ORANGE-BROWN SILTY SAND
										REFUSAL @ 2.0'
										BEDROCK
										NOTE: NO SAMPLING - AUGER PROBE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-203**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **P-204**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF
									1.9'	DARK BROWN SILTY SAND WITH ORGANICS
										REFUSAL @ 1.9'
										BEDROCK
										NOTE: NO SAMPLING - AUGER PROBE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-204**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **P-205**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF
										DARK BROWN SILTY SAND WITH ORGANICS
									2.6'	
										REFUSAL @ 2.6'
										BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-205**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **P-206**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF
										DARK BROWN TO BROWN SILTY SAND
									3.4'	
										REFUSAL @ 3.4'
										BEDROCK
										NOTE: NO SAMPLING - AUGER PROBE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-206**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **P-207**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF
									1.9'	BROWN SILTY SAND, TRACE GRAVEL
										REFUSAL @ 1.9'
										BEDROCK
										NOTE: NO SAMPLING - AUGER PROBE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-207**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **P-208**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										BEDROCK AT GROUND SURFACE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-208**

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%

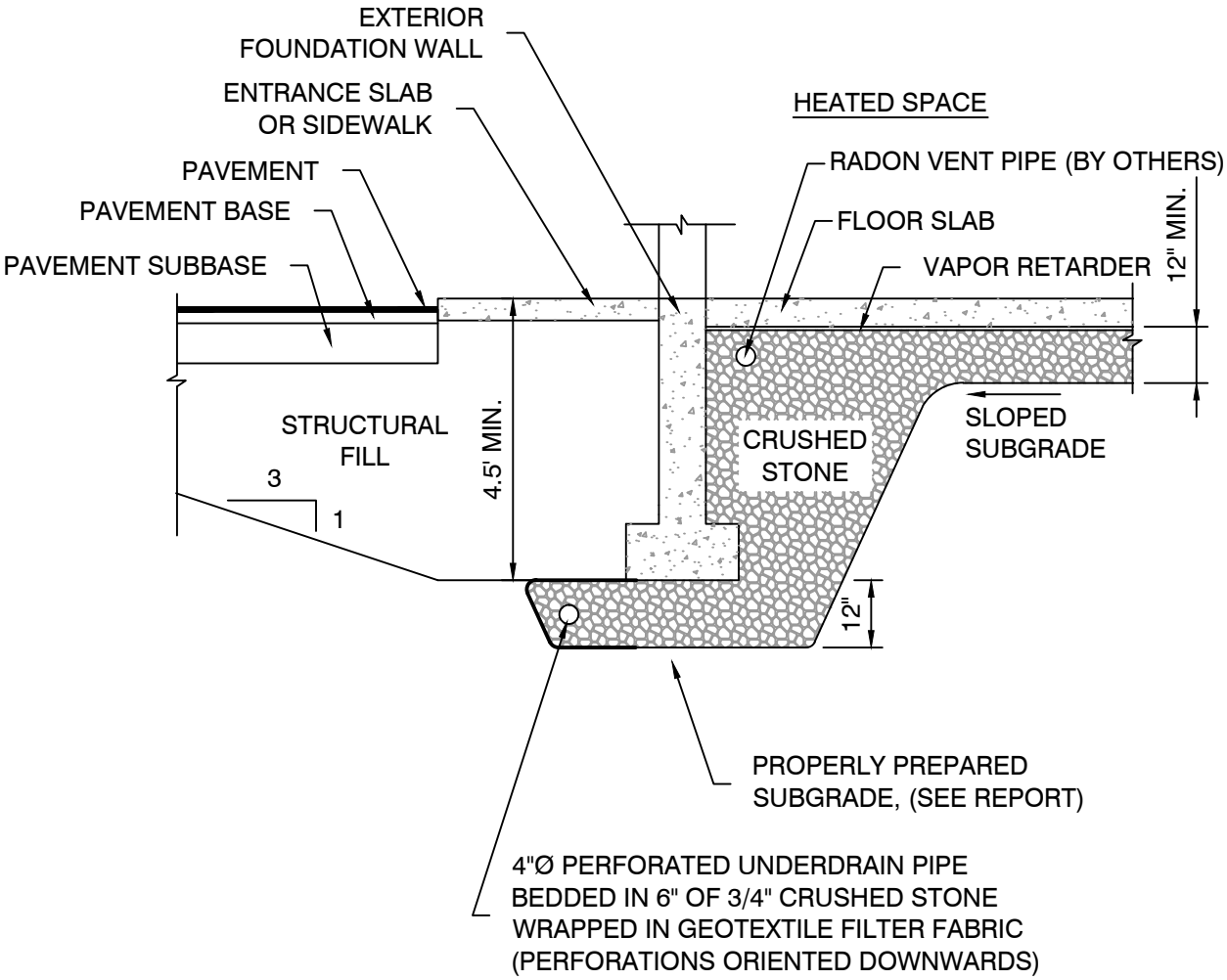
Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to ½" thickness
Layer:	½" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.



NOTE:

1. UNDERDRAIN INSTALLATION AND MATERIAL GRADATION RECOMMENDATIONS ARE CONTAINED WITHIN THIS REPORT.

2. DETAIL IS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY, NOT FOR CONSTRUCTION.

S.W.COLE
ENGINEERING, INC.

HAWTHORN DEVELOPMENT, LLC

UNDERDRAIN DETAIL

PROPOSED RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, MAINE

Job No.:	14-1188	Scale:	Not to Scale
Date :	12/05/2014	Sheet:	16

R:\2014\14-1188\CAD\Drawings\14-1188 Sheet 16 UD.dwg, 12/5/2014 2:25:55 PM, 1:1, CEM, S.W. Cole Engineering, Inc.

APPENDIX A

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-1**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

DATE START: 12/9/2004
DATE FINISH: 12/9/2004
ELEVATION: 140.8
SWC REP.: PFK

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
OVERBURDEN SOILS SATURATED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
										OVERLYING BROWN SILTY SAND WITH ORGANICS AND COBBLES
										GLACIAL TILL
									5.0'	
										BEDROCK
										INTERBEDDED WHITE TO LIGHT GRAY
										MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	53"	10.0'						RQD = 37%
	2R	60"	59"	15.0'					15.0'	RQD = 60%
										BOTTOM OF EXPLORATION AT 15.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-2 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

DATE START: 12/9/2004
DATE FINISH: 12/9/2004
ELEVATION: 158.7
SWC REP.: PFK

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
1" PIEZOMETER INSTALLED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	FOREST DUFF / TOPSOIL
										BEDROCK
										[ADVANCED BORING BY AIR HAMMER TO 21.5']
									21.5'	
										INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	58"	26.5'						RQD = 77 %
	2R	58"	58"	31.3'					31.3'	RQD = 63 %
										BOTTOM OF EXPLORATION AT 31.3'

PIEZOMETER DETAILS:
SCREEN 26.3' - 31.3'
FILTER SAND 21' - 31.3'
BENTONITE 19' - 21'
SAND TO SURFACE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-2 / MW**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-3**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/9/2004
DATE FINISH: 12/9/2004
ELEVATION: 144.4
SWC REP.: PFK

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
OVERBURDEN SOILS SATURATED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
										OVERLYING BROWN SILTY SAND WITH ORGANICS AND COBBLES
									2.5'	GLACIAL TILL
										PROBABLE WEATHERED BEDROCK
									4.5'	
										BEDROCK
									7.0'	[ADVANCED BORING BY ROLLER CONE TO 7.0']
										INTERBEDDED WHITE TO LIGHT GRAY
										MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	60"	12.0'						RQD = 62 %
	2R	60"	59"	17.0'					17.0'	RQD = 72 %
										BOTTOM OF EXPLORATION AT 17.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-4 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/9/2004
DATE FINISH: 12/10/2004
ELEVATION: 137
SWC REP.: PFK / KBG

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:	SS	1 3/8"		
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
1" PIEZOMETER INSTALLED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	FOREST DUFF / TOPSOIL
	1D	24"	12"	2.0'	WOH/12"		2	3		RUST BROWN SILTY SAND WITH COBBLES - GLACIAL TILL
									3.0'	~LOOSE~
	2D	3"	3"	5.2'	50/3"					PROBABLE WEATHERED BEDROCK
										[ADVANCED BORING BY ROLLER CONE TO 12.0']
	3D	3"	3"	10.2'	50/3"					
									12.0'	
										BEDROCK
										INTERBEDDED WHITE TO LIGHT GRAY
										MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	59"	17.0'						RQD = 40 %
	2R	63"	58"	22.3'					22.3'	RQD = 83 %
										BOTTOM OF EXPLORATION AT 22.3'

PIEZOMETER DETAILS:
SCREEN 17.5' - 22.5'
FILTER SAND 15' - 22.5'
BENTONITE 13' - 15'
SAND TO SURFACE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-4 / MW**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-5**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/10/2004
DATE FINISH: 12/10/2004
ELEVATION: 153.2
SWC REP.: KBG

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
OVERBURDEN SOILS SATURATED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										TOPSOIL OVERLYING BROWN SILTY SAND AND GRAVEL - GLACIAL TILL
									4.0'	
									5.0'	PROBABLE WEATHERED BEDROCK
										BEDROCK
										[BORING ADVANCED BY AIR HAMMER TO 15']
									15.0'	
										INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	53"	20.0'						RQD = 83 %
	2R	60"	58"	25.0'					25.0'	RQD = 63 %
										BOTTOM OF EXPLORATION AT 25.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-5**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-6**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

DATE START: 12/13/2004
DATE FINISH: 12/13/2004
ELEVATION: 153 +/-
SWC REP.: KBG

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.5'	FOREST DUFF / TOPSOIL
										BEDROCK
										[ADVANCED BORING BY AIR HAMMER TO 15.0']
									15.0'	
										INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	56"	20.0'						RQD = 47 %
	2R	60"	58"	25.0'					25.0'	RQD = 83 %
										BOTTOM OF EXPLORATION AT 25.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-6**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-7**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/10/2004
DATE FINISH: 12/10/2004
ELEVATION: 156.7
SWC REP.: KBG

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										PROBABLE WEATHERED BEDROCK [ADVANCED BORING BY AIR HAMMER TO 20']
									10.0'	BEDROCK
									20.0'	INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	59"	25.0'						RQD = 87 %
	2R	60"	52"	30.0'					30.0'	RQD = 78 %
										BOTTOM OF EXPLORATION AT 30.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-7**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-8 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/13/2004
DATE FINISH: 12/13/2004
ELEVATION: 140.8
SWC REP.: KBG

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
1" PIEZOMETER INSTALLED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
									2.0'	OVERLYING BROWN SILTY SAND WITH ORGANICS
										BEDROCK
										[ADVANCED BORING BY AIR HAMMER TO 15.0']
									15.0'	
										INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	59"	20.0'						RQD = 78 %
	2R	60"	58"	25.0'					25.0'	RQD = 82 %
										BOTTOM OF EXPLORATION AT 25.0'

PIEZOMETER DETAILS:
SCREEN 20' - 25'
FILTER SAND 16' - 25'
BENTONITE 14' - 16'
SAND TO SURFACE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-8 / MW**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-9**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

DATE START: 12/10/2004
DATE FINISH: 12/10/2004
ELEVATION: 136.6
SWC REP.: KBG

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:	SS	1 3/8"		
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
OVERBURDEN SATURATED
ARTESIAN WATER FLOW AFTER 1R OBTAINED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	FOREST DUFF / TOPSOIL
	1D	24"	15"	2.0'	2	3	2	2		BROWN TO ORANGE SILTY SAND WITH ORGANICS
										OCCASIONAL COBBLES - GLACIAL TILL
									4.0'	~LOOSE~
	2D	0"	0"	5.0'	50/0"					PROBABLE WEATHERED BEDROCK
									6.0'	[ADVANCED BORING BY ROLLER CONE TO 6']
										BEDROCK
										INTERBEDDED WHITE TO LIGHT GRAY
										MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	1R	60"	59"	11.0'						RQD = 63 %
	2R	60"	59"	16.0'					16.0'	RQD = 98 %
										BOTTOM OF EXPLORATION AT 16.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-9**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-10**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

DATE START: 12/13/2004
DATE FINISH: 12/14/2004
ELEVATION: 151.2
SWC REP.: KBG

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
									2.0'	OVERLYING BROWN SILTY SAND WITH ORGANICS
										BEDROCK
										[ADVANCED BORING BY AIR HAMMER TO 20.0']
									20.0'	
										INTERBEDDED WHITE TO LIGHT GRAY TO LIGHT GREEN MIGMATITE AND BIOTITE-MUSCOVITE-CHLORITE SCHIST
	1R	60"	58"	25.0'						RQD = 68 %
										INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	2R	60"	60"	30.0'					30.0'	RQD = 92 %
										BOTTOM OF EXPLORATION AT 30.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-10**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-11**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

DATE START: 12/14/2004
DATE FINISH: 12/14/2004
ELEVATION: 149.9
SWC REP.: KBG

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
									1.5'	OVERLYING BROWN SILTY SAND WITH ORGANICS
										PROBABLE WEATHERED BEDROCK
									4.0'	
										BEDROCK
										[ADVANCED BORING BY ROLLER CONE TO 9.0']
									9.0'	
										WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS
	1R	60"	56"	14.0'						RQD = 68 %
										INTERBEDDED WHITE TO GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	2R	60"	58"	19.0'						RQD = 73 %
	3R	60"	59"	24.0'					24.0'	RQD = 65 %
										BOTTOM OF EXPLORATION AT 24.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-11**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-12 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

DATE START: 12/10/2004
DATE FINISH: 12/10/2004
ELEVATION: 138.4
SWC REP.: KBG

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:	SS	1 3/8"		
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
1" PIEZOMETER INSTALLED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									1.0'	FOREST DUFF / TOPSOIL
	1D	24"	8"	2.0'	1	1	2	2	2.0'	BROWN SILTY SAND WITH ORGANICS
										BEDROCK
									6.0'	[ADVANCED BORING BY ROLLER CONE TO 6']
										BEDROCK GRAY BIOTITE-MUSCOVITE
	1R	60"	60"	11.0'						RQD = 30 % INTERBEDDED WHITE TO GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST
	2R	60"	59"	16.0'					16.0'	RQD = 73 %
										BOTTOM OF EXPLORATION AT 16.0'

PIEZOMETER DETAILS:
SCREEN 11' - 16'
FILTER SAND 10' - 16'
BENTONITE 8' - 10'
SAND TO SURFACE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-12 / MW**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-13**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

DATE START: 12/14/2004
DATE FINISH: 12/15/2004
ELEVATION: 152.9
SWC REP.: KBG

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										BEDROCK
									3.0'	[ADVANCED BORING BY AIR HAMMER TO 3.0']
										WHITE TO LIGHT GRAY MIGMATITE AND GRAY BIOTITE-MUSCOVITE SCHIST
	1R	60"	60"	8.0'						RQD = 52 %
										WHITE TO LIGHT GRAY MIGMATITE
	2R	60"	60"	13.0'						RQD = 89 %
	3R	60"	56"	18.0'						RQD = 82 %
	4R	60"	54"	23.0'						RQD = 72 %
	5R	60"	60"	28.0'					28.0'	RQD = 82 %
										BOTTOM OF EXPLORATION AT 28.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-13**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-14**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/13/2004
DATE FINISH: 12/13/2004
ELEVATION: 147.8
SWC REP.: KBG

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
SOIL OVERBURDEN SATURATED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
									2.0'	OVERLYING BROWN SILTY SAND
										BEDROCK
										[ADVANCED BORING BY ROLLER CONE TO 9']
									9.0'	
										GRAY BIOTITE-MUSCOVITE SCHIST WITH WHITE TO LIGHT GRAY MIGMATITE LAYERS
	1R	60"	60"	14.0'						RQD = 45 %
										WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS
	2R	60"	60"	19.0'						RQD = 80 %
	3R	60"	60"	24.0'					24.0'	RQD = 75 %
										BOTTOM OF EXPLORATION AT 24.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-14**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-15**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

DATE START: 12/13/2004
DATE FINISH: 12/13/2004
ELEVATION: 142.3
SWC REP.: KBG

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:	SS	1 3/8"		
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
OVERBURDEN SOILS SATURATED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
	1D	24"	3"	2.0'	1	1	1	5	1.5'	~LOOSE~
									3.0'	BROWN SILTY SAND TRACE GRAVEL
										BROWN SILTY SAND SOME GRAVEL
	2D	5"	5"	5.3'	50/5"				4.8'	WITH OCCASIONAL COBBLES
									6.0'	PROBABLE WEATHERED BEDROCK
										BEDROCK
									11.0'	[ADVANCED BORING BY ROLLER CONE TO 11.0']
										BROWN SULFIDIC SCHIST AND GRAY BIOTITE-MUSCOVITE SCHIST
	1R	60"	58"	16.0'						RQD = 23 %
										GRAY BIOTITE-MUSCOVITE SCHIST AND WHITE TO LIGHT GRAY MIGMATITE
	2R	60"	60"	21.0'					21.0'	RQD = 93 %
										BOTTOM OF EXPLORATION AT 21.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-15**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

DATE START: 12/15/2004
DATE FINISH: 12/15/2004
ELEVATION: 155.2
SWC REP.: KBG

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
1" PIEZOMETER INSTALLED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
										OVERLYING BROWN SILTY SAND WITH ORGANICS
									3.0'	
									3.5'	PROBABLE WEATHERED BEDROCK
										BEDROCK
										[ADVANCED BORING BY AIR HAMMER TO 18.0']
									18.0'	
										WHITE TO LIGHT GRAY MIGMATITE WITH
										GRAY BIOTITE-MUSCOVITE SCHIST LAYERS
	1R	60"	58"	23.0'						RQD = 78 %
	2R	60"	59"	28.0'					28.0'	RQD = 65 %
										BOTTOM OF EXPLORATION AT 28.0'
										PIEZOMETER DETAILS: SCREEN 23' - 28'
										FILTER SAND 22' - 28"
										BENTONITE 20' - 22'
										SAND TO SURFACE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16 / MW**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-17 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/14/2004
DATE FINISH: 12/14/2004
ELEVATION: 114.5
SWC REP.: KBG

PROJECT / CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:	SS	1 3/8"		
CORE BARREL:	NQ2	2"		

WATER LEVEL INFORMATION
NESTED 1" PIEZOMETERS INSTALLED

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										FOREST DUFF / TOPSOIL
									2.0'	OVERLYING BROWN SILTY SAND WITH ORGANICS
										BEDROCK
										[ADVANCED BORING BY ROLLER CONE TO 10.0']
									10.0'	
										INTERBEDDED GRAY GRANITIC GNEISS AND SCHIST
	1R	60"	60"	15.0'						RQD = 45 %
	2R	60"	57"	20.0'					20.0'	RQD = 65 %
										BOTTOM OF EXPLORATION AT 20.0'

PIEZOMETER DETAILS:
SCREEN 15' - 20'
FILTER SAND 14' - 20'
BENTONITE 11' - 14'
SCREEN 5' - 10'
FILTER SAND 4' - 11'
BENTONITE TO SURFACE

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS: PROPOSED POND

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-17 / MW**

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-1

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: MTT **DATE:** 1/10/2005 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
5.0'							
	R1	60"	53"	22"/60" 37%	POOR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 15 TO 40 DEGREES FROM HORIZONTAL.
							HIGHLY FRACTURED ZONE
10.0'							ZONE OF CORE LOSS
	R2	60"	59"	36"/60" 60%	FAIR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 15 TO 40 DEGREES FROM HORIZONTAL.
							HIGHLY FRACTURED ZONE
15.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 15.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-2

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: MTT **DATE:** 1/10/2005 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (FT)	CORE RECOVERY (FT)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
21.5'	R1	60"	58"	46"/60" 77%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 40 DEGREES FROM HORIZONTAL
26.5'	R2	58"	58"	37"/58" 63%	FAIR		ZONE OF CORE LOSS INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 40 DEGREES FROM HORIZONTAL
31.3'							BOTTOM OF EXPLORATION @ 31.3'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-3

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: MTT **DATE:** 1/10/2005 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
7.0'	R1	60"	60"	37"/60" 62%	FAIR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 25 TO 50 DEGREES FROM HORIZONTAL.
12.0'	R2	60"	59"	46"/60" 72%	FAIR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 25 TO 50 DEGREES FROM HORIZONTAL.
17.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 17.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-4

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: MTT **DATE:** 1/10/2005 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
12.0'							
	R1	60"	59"	24"/60" 40%	POOR		HIGHLY FRACTURED ZONE INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, VERY WEATHERED TO MODERATELY WEATHERED, FRACTURES @ 20 TO 60 DEGREES FROM HORIZONTAL
17.0'							ZONE OF CORE LOSS
	R2	63"	58"	52"/63" 83%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD SLIGHTLY WEATHERED, FRACTURES @ 20 TO 60 DEGREES FROM HORIZONTAL
22.3'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 22.3'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-5

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: MTT **DATE:** 1/10/2005 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
15.0'	R1	60"	53"	50"/60" 83%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 20 TO 40 DEGREES FROM HORIZONTAL
20.0'							ZONE OF CORE LOSS
	R2	60"	58"	38"/60" 63%	FAIR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 20 TO 40 DEGREES FROM HORIZONTAL
25.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 25.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-6

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: MTT **DATE:** 1/10/2005 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
15.0'	R1	60"	56"	28"/60" 47%	POOR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL HIGHLY FRACTURED ZONE ZONE OF CORE LOSS
20.0'	R2	60"	58"	50"/60" 83%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL HIGHLY FRACTURED ZONE ZONE OF CORE LOSS
25.0'							BOTTOM OF EXPLORATION @ 25.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-7

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: MTT **DATE:** 1/10/2005 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
20.0'	R1	60"	59"	52"/60" 87%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL
25.0'							ZONE OF CORE LOSS
	R2	60"	52"	47"/60" 78%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL
30.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 30.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-8

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/21/2004 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
15.0'	R1	60"	59"	47"/60" 78%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED BECOMING SLIGHTLY WEATHERED, FRACTURES @ 0 TO 55 DEGREES FROM HORIZONTAL.
20.0'							ZONE OF CORE LOSS
	R2	60"	58"	49"/60" 82%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL.
25.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 25.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-9

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: MTT **DATE:** 1/10/2005 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
6.0'							
	R1	60"	59"	38"/60" 63%	FAIR		HIGHLY FRACTURED ZONE INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY TO MODERATELY WEATHERED, FRACTURES @ 15 TO 35 DEGREES FROM HORIZONTAL
11.0'							ZONE OF CORE LOSS
	R2	60"	59"	59"/60" 98%	EXCELLENT		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY TO MODERATELY WEATHERED, FRACTURES @ 15 TO 35 DEGREES FROM HORIZONTAL
16.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 16.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-10

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/21/2004 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
20.0'							
	R1	60"	58"	41"/60" 68%	F A I R		INTERBEDDED WHITE TO LIGHT GRAY TO LIGHT GREEN MIGMATITE AND BIOTITE-MUSCOVITE-CHLORITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 25 DEGREES FROM HORIZONTAL
25.0'							ZONE OF CORE LOSS
	R2	60"	60"	55"/60" 92%	E X C E L L E N T		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 25 DEGREES FROM HORIZONTAL
30.0'							
							BOTTOM OF EXPLORATION @ 30.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-11

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/20/2004 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
9.0'	R1	60"	56"	41"/60" 68%	FAIR		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRACTURES @ 10 TO 45 DEGREES FROM HORIZONTAL
14.0'							ZONE OF CORE LOSS
	R2	60"	58"	44"/60" 73%	FAIR		INTERBEDDED WHITE TO GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 20 TO 45 DEGREES FROM HORIZONTAL
19.0'							ZONE OF CORE LOSS
	R3	60"	59"	39"/60" 65%	FAIR		INTERBEDDED WHITE TO GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHLTY WEATHERED, FRACTURES @ 0 TO 35 DEGREES FROM HORIZONTAL
24.0'							ZONE OF CORE LOSS BOTTOM OF EXPLORATION @ 24.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-12

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/21/2004 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
6.0'	R1	60"	60"	18"/60" 30%	POOR		GRAY BIOTITE-MUSCOVITE, MODERATELY HARD, MODERATELY WEATHERED, HIGHLY FRACTURED, FRACTURES @ 5 TO 40 DEGREES FROM HORIZONTAL
11.0'	R2	60"	59"	44"/60" 73%	FAIR		INTERBEDDED WHITE TO GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 0 TO 35 DEGREES FROM HORIZONTAL
16.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 16.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-13

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/20/2004 **SHEET NO.:** 1 OF 2

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
3.0'	R1	60"	60"	31"/60" 52%	FAIR		WHITE TO LIGHT GRAY MIGMATITE AND GRAY BIOTITE- MUSCOVITE SCHIST, VERY HARD TO MODERATELY HARD, MODERATELY TO SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL
8.0'	R2	60"	60"	53"/60" 89%	GOOD		WHITE TO LIGHT GRAY MIGMATITE, VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 25 DEGREES FROM HORIZONTAL
13.0'	R3	60"	56"	49"/60" 82%	GOOD		WHITE TO LIGHT GRAY MIGMATITE, VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 20 DEGREES FROM HORIZONTAL
18.0'							ZONE OF CORE LOSS

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-13

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/20/2004 **SHEET NO.:** 2 OF 2

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
18.0'	R4	60"	54"	43"/60" 72%	FAIR		WHITE TO LIGHT GRAY MIGMATITE, VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 0 TO 25 DEGREES FROM HORIZONTAL
23.0'							ZONE OF CORE LOSS
	R5	60"	60"	49"/60" 82%	GOOD		WHITE TO LIGHT GRAY MIGMATITE, VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 0 TO 40 DEGREES FROM HORIZONTAL
28.0'							
							BOTTOM OF EXPLORATION @ 28.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-14

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/20/2004 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
9.0'	R1	60"	60"	27"/60" 45%	POOR		GRAY BIOTITE-MUSCOVITE SCHIST WITH WHITE TO LIGHT GRAY MIGMATITE LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), MODERATELY TO SLIGHTLY WEATHERED, FRACTURES @ 0 TO 80 DEGREES FROM HORIZONTAL.
14.0'	R2	60"	60"	48"/60" 80%	GOOD		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRCATURES @ 0 TO 40 DEGREES FROM HORIZONTAL.
19.0'	R3	60"	60"	45"/60" 75%	GOOD		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRCATURES @ 10 TO 45 DEGREES FROM HORIZONTAL.
24.0'							BOTTOM OF EXPLORATION @ 24.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-15

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/21/2004 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
11.0'	R1	60"	58"	14"/60" 23%	VERY POOR		BROWN SULFIDIC SCHIST (11.0' TO 12.8') AND GRAY BIOTITE-MUSCOVITE SCHIST (12.8' TO 16.0'), SOFT BECOMING MODERATELY HARD, MODERATELY WEATHERED, HIGHLY FRACTURED, FRACTURES @ 0 TO 50 DEGREES FROM HORIZONTAL. HIGHLY FRACTURED ZONE ZONE OF CORE LOSS
16.0'	R2	60"	60"	56"/60" 93%	EXCELLENT		GRAY BIOTITE-MUSCOVITE SCHIST (16.0' TO 17.3') AND WHITE TO LIGHT GRAY MIGMATITE (17.3' TO 21.0'), MODERATELY HARD BECOMING VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 15 DEGREES FROM HORIZONTAL.
21.0'							BOTTOM OF EXPLORATION @ 21.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-16

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/20/2004 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
18.0'	R1	60"	58"	47"/60" 78%	GOOD		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRACTURES @ 5 TO 25 DEGREES FROM HORIZONTAL
23.0'							ZONE OF CORE LOSS
	R2	60"	59"	39"/60" 65%	FAIR		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRACTURES @ 0 TO 35 DEGREES FROM HORIZONTAL
28.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 28.0'

S.W.COLE ENGINEERING, INC.

ROCK CORE LOG

PROJECT: _____ **BORING NO.:** B-17

CLIENT: _____ **PROJECT NO.:** 04-1228

LOGGED BY: GWB **DATE:** 12/21/2004 **SHEET NO.:** 1 OF 1

CHECKED BY: GWB **DATE:** 1/13/2005 **CORE SIZE:** NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
10.0'	R1	60"	60"	27"/60" 45%	POOR		INTERBEDDED GRAY GRANITIC GNEISS AND SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 40 DEGREES FROM HORIZONTAL
15.0'	R2	60"	57"	39"/60" 65%	FAIR		INTERBEDDED GRAY GRANITIC GNEISS AND SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 35 DEGREES FROM HORIZONTAL. HIGHLY FRACTURED ZONE
20.0'							ZONE OF CORE LOSS
							BOTTOM OF EXPLORATION @ 20.0'

S. W. COLE ENGINEERING, INC.

AUGER PROBE LOG

PROJECT/CLIENT:
CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING, INC.

PROJECT NUMBER 04-1228
AUGER PROBE SIZE O.D. SOLID STEM

BORING NO. **P-1**
GROUND ELEV. 141 +/-
DATE 12/15/2004

DEPTH (FT)	STRATUM DESCRIPTION
	FOREST DUFF / TOPSOIL
	OVERLYING BROWN SILTY SAND
	WITH ORGANICS AND COBBLES
2.4'	
	REFUSAL AT 2.4'
	(PROBABLE BEDROCK)

BORING NO. **P-2**
GROUND ELEV. 142 +/-
DATE 12/15/2004

DEPTH (FT)	STRATUM DESCRIPTION
	FOREST DUFF / TOPSOIL
	OVERLYING BROWN SILTY SAND
	WITH ORGANICS AND COBBLES
4.0'	
	PROBABLE WEATHERED BEDROCK
9.0'	
	REFUSAL AT 9.0'
	(PROBABLE BEDROCK)

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

S. W. COLE ENGINEERING, INC.

AUGER PROBE LOG

PROJECT/CLIENT:
CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING, INC.

PROJECT NUMBER 04-1228
AUGER PROBE SIZE O.D. SOLID STEM

BORING NO. **P-3**
GROUND ELEV. 134 +/-
DATE 12/15/2004

DEPTH (FT)	STRATUM DESCRIPTION
	FOREST DUFF / TOPSOIL OVERLYING BROWN SILTY SAND WITH ORGANICS AND COBBLES
3.0'	REFUSAL AT 3.0' (PROBABLE BEDROCK)

BORING NO. **P-4**
GROUND ELEV. 142 +/-
DATE 12/15/2004

DEPTH (FT)	STRATUM DESCRIPTION
	FOREST DUFF / TOPSOIL OVERLYING BROWN SILTY SAND WITH ORGANICS AND COBBLES
3.0'	PROBABLE WEATHERED BEDROCK
5.0'	REFUSAL AT 5.0' (PROBABLE BEDROCK)

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

S. W. COLE ENGINEERING, INC.

AUGER PROBE LOG

PROJECT/CLIENT:
CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING, INC.

PROJECT NUMBER 04-1228
AUGER PROBE SIZE O.D. SOLID STEM

BORING NO. **P-5**
GROUND ELEV. 132 +/-
DATE 12/15/2004

DEPTH (FT)	STRATUM DESCRIPTION
	FOREST DUFF / TOPSOIL
	OVERLYING BROWN SILTY SAND
	WITH ORGANICS AND COBBLES
2.7'	
	REFUSAL AT 2.7'
	(PROBABLE BEDROCK)

BORING NO. **P-6**
GROUND ELEV. 139 +/-
DATE 12/15/2004

DEPTH (FT)	STRATUM DESCRIPTION
	FOREST DUFF / TOPSOIL
	OVERLYING BROWN SILTY SAND
1.5'	WITH ORGANICS AND COBBLES
2.0'	PROBABLE WEATHERED BEDROCK
	REFUSAL AT 2.0'
	(PROBABLE BEDROCK)

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

S. W. COLE ENGINEERING, INC.

AUGER PROBE LOG

PROJECT/CLIENT:
CLIENT:
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING, INC.

PROJECT NUMBER 04-1228
AUGER PROBE SIZE O.D. SOLID STEM

BORING NO. **P-7**
GROUND ELEV. 135 +/-
DATE 12/15/2004

DEPTH (FT)	STRATUM DESCRIPTION
	FOREST DUFF / TOPSOIL
	OVERLYING BROWN SILTY SAND
	WITH ORGANICS AND COBBLES
5.2'	
	REFUSAL AT 5.2'
	(PROBABLE BEDROCK)

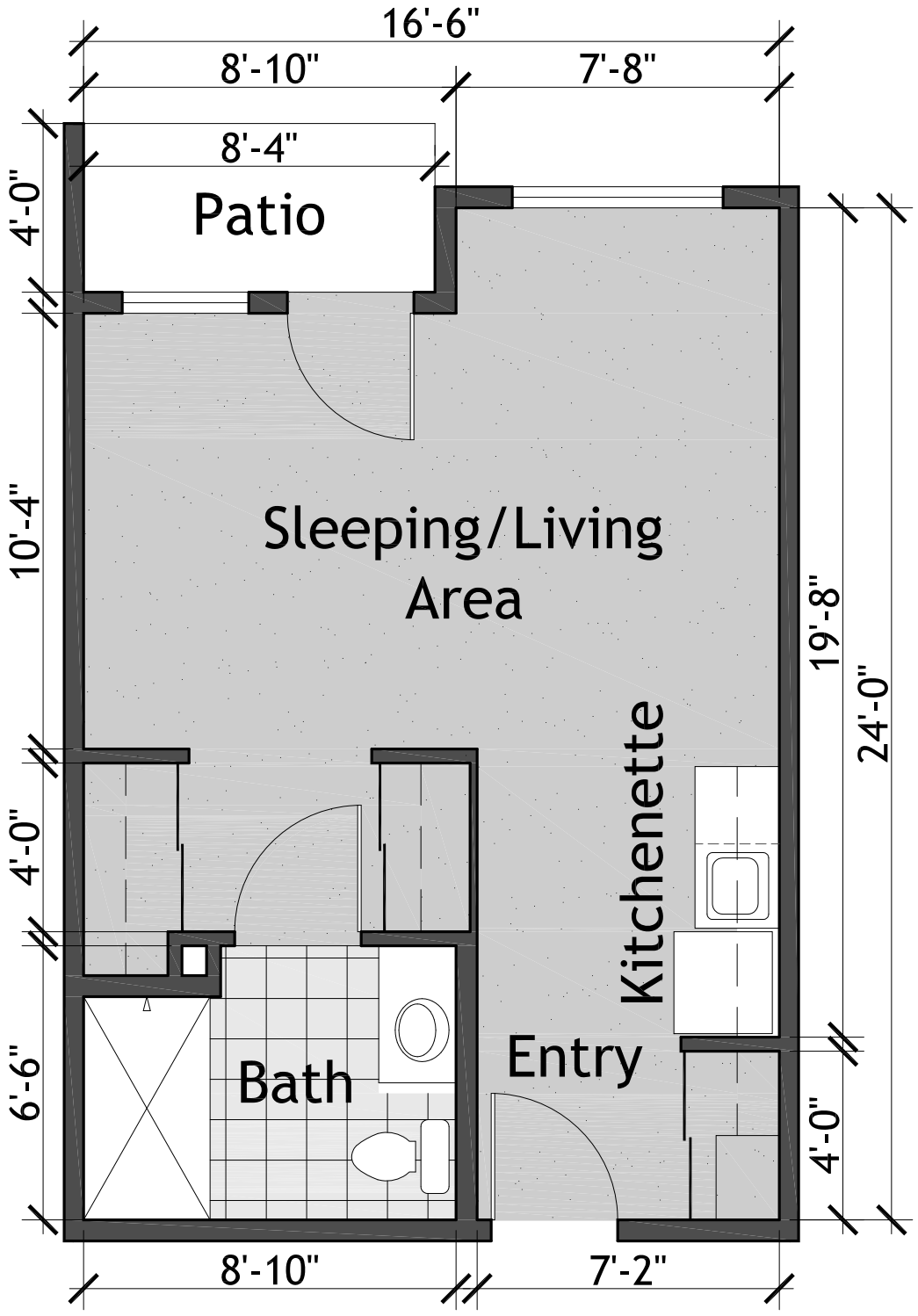
BORING NO. **P-8**
GROUND ELEV. 142 +/-
DATE 12/15/2004

DEPTH (FT)	STRATUM DESCRIPTION
	FOREST DUFF / TOPSOIL
	OVERLYING BROWN SILTY SAND
1.5'	WITH ORGANICS AND COBBLES
	REFUSAL AT 1.5'
	(PROBABLE BEDROCK)

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

Section 21. Typical Unit Plans/Floor Plans

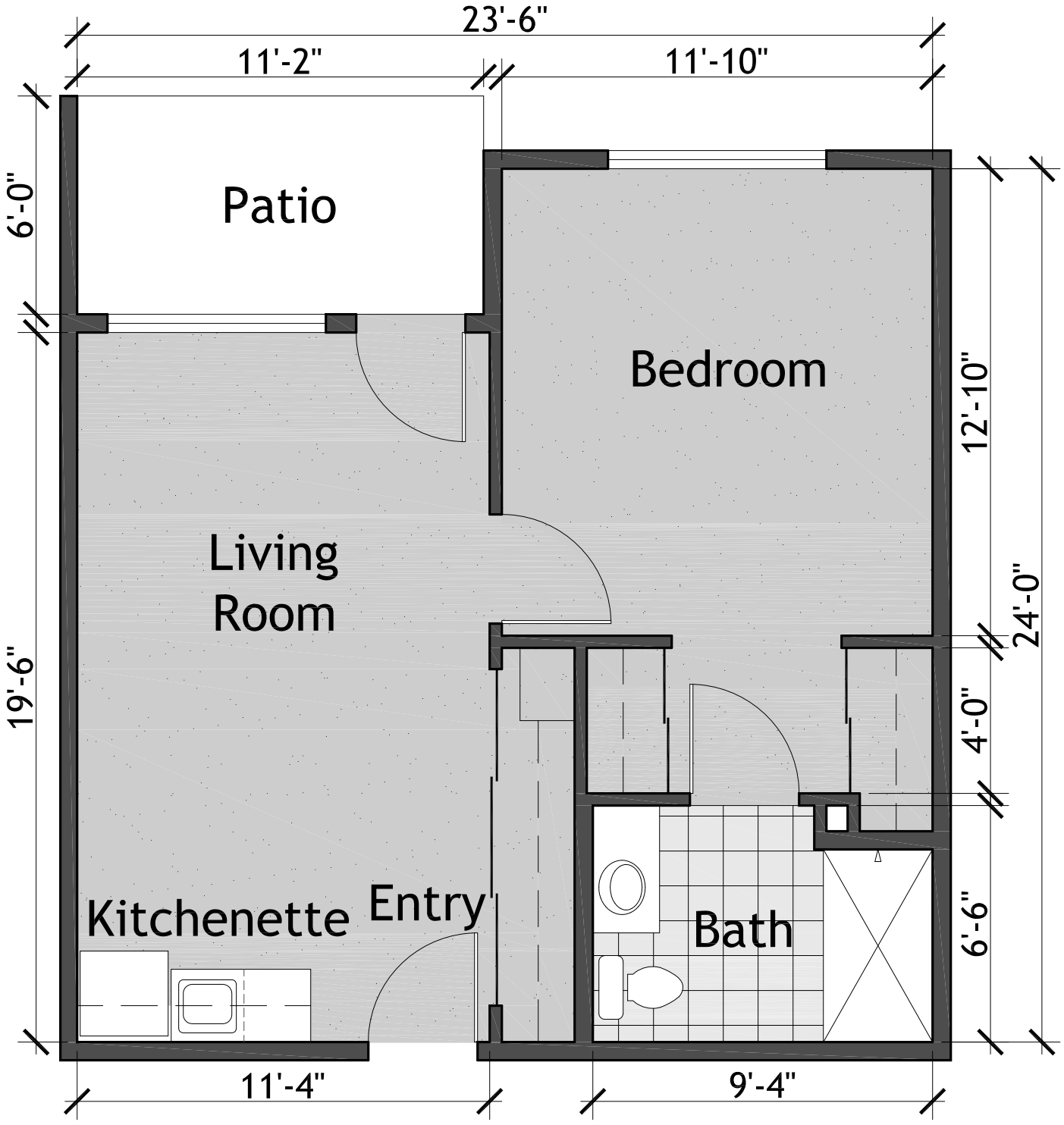


TYPICAL SUITE A

SCALE: 1/4" = 1'-0"

Portland Retirement Residence

Portland, ME

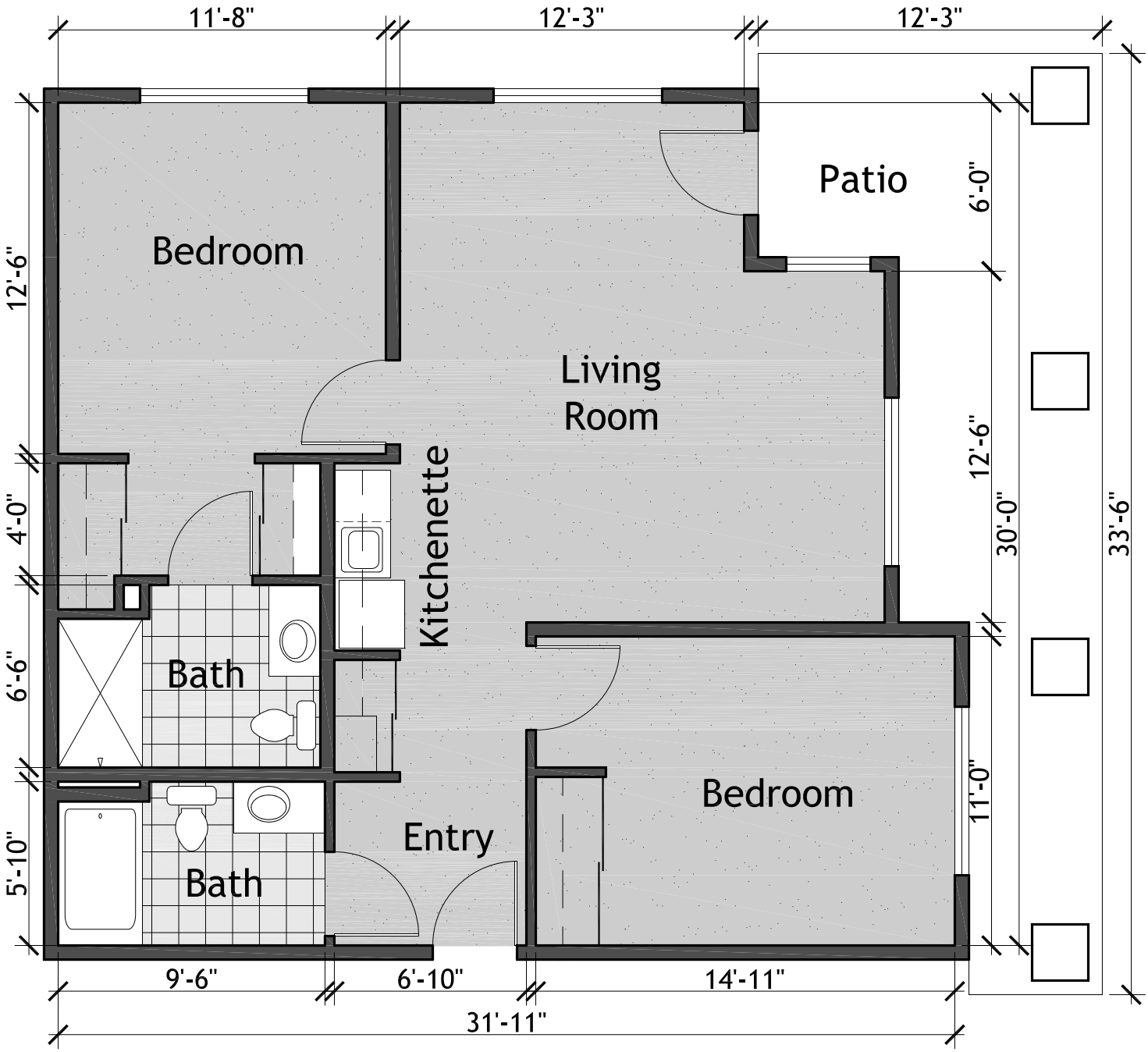


TYPICAL SUITE B

SCALE: 1/4" = 1'-0"

Portland Retirement Residence

Portland, ME



TYPICAL SUITE C

SCALE: 3/16" = 1'-0"

Portland Retirement Residence

Portland, ME

Section 22. Site Plan/Site Elevations/Color Board



EXTERIOR MATERIALS:

Roof- GAF Timberline: Weathered Wood

Trim- James Hardie: Arctic White

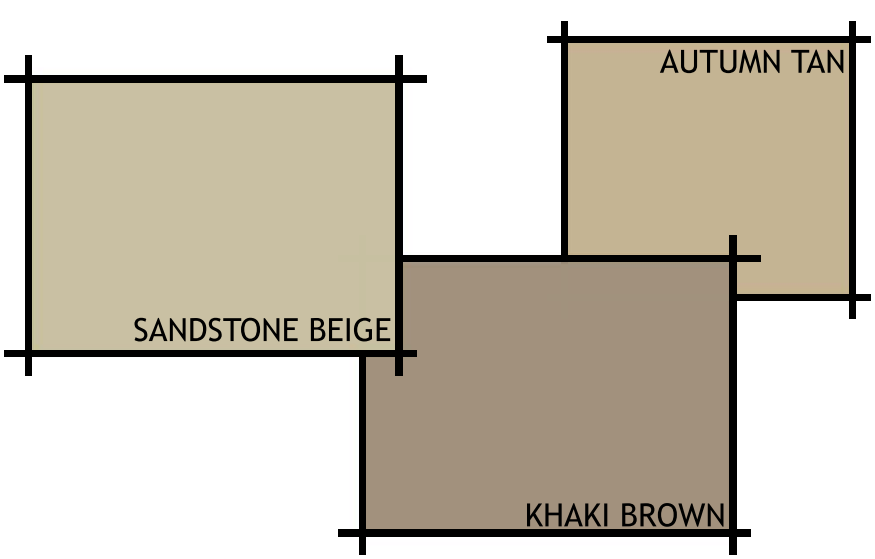
Siding 1- James Hardie: Khaki Brown

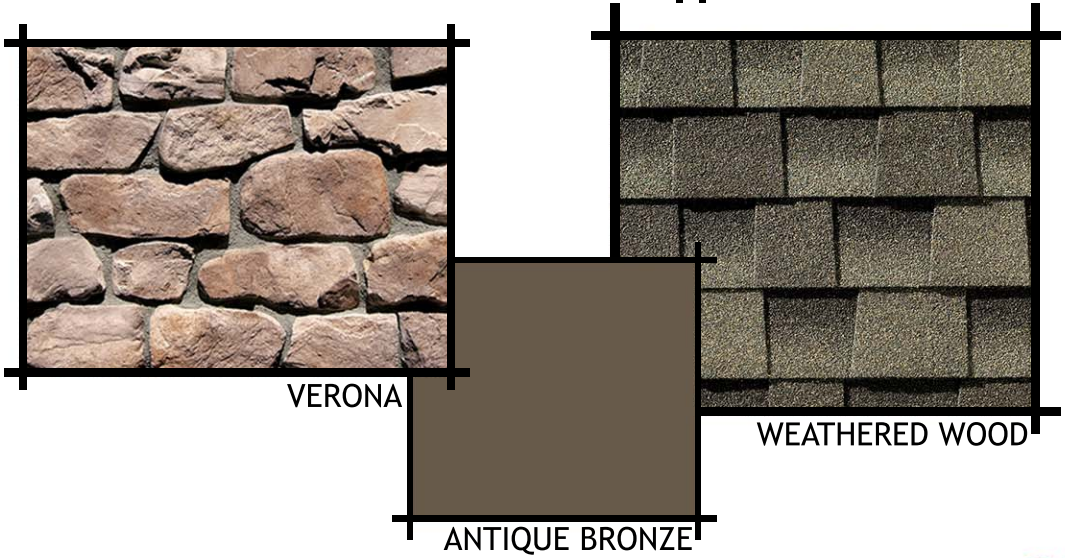
Siding 2- James Hardie: Sandstone Beige

Shingles- James Hardie: Autumn Tan

Awnings- MS Metal: Antique Bronze

Stone- Coronado French Country Villa: Verona





Portland Retirement Residence

Portland, ME

lenity architecture
3150 Kettle Court SE, Salem, Oregon 97301
P 503 399 1090 F 503 399 0565 w lenityarchitecture.com

HAWTHORN RETIREMENT GROUP
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

Section 23. Site Construction Plans/Landscaping Plans

Section 24. Lighting Cut Sheets/Lighting Plan

Portland Retirement Residence

Portland, ME

Exterior Lighting

Cut Sheets

9/11/2015

lenity
architecture

LITHONIA LIGHTING®

Catalog Number	
Notes	Type

FEATURES & SPECIFICATIONS

Intended Use

For use in indoor or outdoor wet locations, such as patios and pathways.

Construction

Aluminum, white die-cast frame-in.

Louvered, slotted, and opal faceplates available.

Die-cast powder coat painted faceplates are available in white or black.

Faceplates are shipped separately.

Electrical system

9DTT – encased-and-potted, high power factor (HPF) electromagnetic ballast standard (120V only).

13DTTE – high power factor (HPF), -20°F to 158°F, instant start electronic ballast standard (120V or 277V).

Maximum of 4 No. 12 AWG through branch circuit connectors suitable for 75°C or higher permitted in box.

One electrical conduit fitting and one plug provided.

Electrical fittings are suitable for wet locations in wood construction, masonry and poured concrete applications.

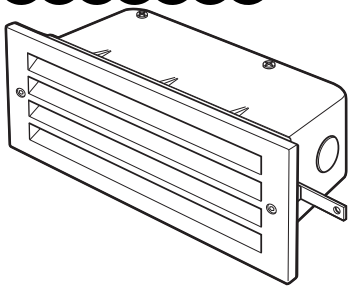
Listing

Wet location listed.

UL listed to U.S. and Canadian safety standards.

INSTALLED AT PATIO IN SEAT WALL.

TYPE D



Compact Fluorescent Lighting

WSL1F

WET LOCATION STEPLIGHT

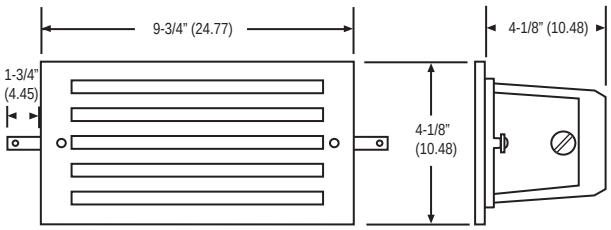
Non-IC

Specifications

Cutout: 9-1/4" x 3-5/8"

Suitable depth for concrete 4.25"

Mounting nipples make cutout 10.25" clearance.



All dimensions are inches (centimeters).

ORDERING INFORMATION

Example: **WSL1F 9DTT FPLBL 120 FPLBL**

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line.

WSL1F	Wattage/Lamp	Faceplate	Voltage
Series	**9DTT**[1]	**FPL** White Louvered	**120**
WSL1F	**13DTTE**[2]	**FPLBL** Black Louvered	**277**
		FPS White Slotted	
		FPSBL Black Slotted	
		FPO White Opal	
		FPOBL Black Opal	

NOTES:

1 120V only.

2 Electronic ballast standard.

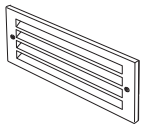
WSL1F Wet Location Steplight, Compact Fluorescent

TYPE D

Faceplates

Louvered Faceplate

FPL	White
FPLBL	Black

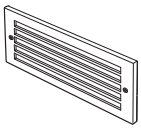


9DTT
13DTT 4-PIN

Non-IC

Slotted

FPS	White
FPSBL	Black

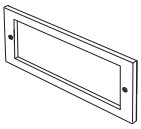


9DTT
13DTT 4-PIN

Non-IC

Opal

FPO	White
FPOBL	Black



9DTT
13DTT 4-PIN

Non-IC

LITHONIA LIGHTING®
An AcuityBrands Company

Sheet #: WSL1F-COM

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Lithonia Lighting
Recessed Downlighting
One Lithonia Way, Conyers, GA 30012
Phone: 800-315-4935 Fax: 770-918-1209
www.lithonia.com

e-conolight®

TYPE F1

SMALL LED FLOODLIGHT
7 WATT LED
(E-GL3L SERIES)

Applications – Security, building facades, displays, signs, and other residential uses.
Typical Mounting Height: 8 to 15 feet





ARCHITECTURAL FEATURES AND LANDSCAPE ELEMENTS.

4"H x **4"**W x **4-5/8"**D

Catalog #	Description	Input Voltage	Delivered Lumen Output	CCT	CRI	Lifetime	Weight	Comparable To:
E-GL3L01N2K (black) **E-GL3L01N2W (white)**	7W LED, Neutral white	120V-277V	600 Lumens	4100K	80	50,000 Hours	0.8 lbs	50W Halogen

Features

- 50,000 hours of maintenance-free operation
- Non-dimmable
- 7W LED
- 600 lumens, comparable to 50W halogen
- Neutral white (4100K) color temperature at 80 CRI
- Low-copper, die-cast aluminum housing and lens frame
- Polyester powder-coat finish (textured black or smooth white)
- Tempered glass lens, thermal shock and impact resistant
- 1/2-inch NPS aluminum die-cast swivel fitter attaches to standard J-box
- Universal voltage (120V through 277V)
- Minimum starting temperature: -22° F
- UL Listed for wet locations
- 1-year warranty

Accessories

None Available

PREMIUM LED DIRECTIONAL SPOT LIGHT 38-WATT LED (E-GL1S SERIES)

Applications – For accenting architecture or lighting landscape areas
Typical Mounting Height: 8 to 15 feet

TYPE F2

ARCHITECTURAL FEATURES AND LANDSCAPE ELEMENTS.





8-1/2"H x **6-1/4"**W x **7-3/4"**D (Height dimension includes fitter)

Catalog #	Description	Input Voltage	Delivered Lumen Output	Beam Angle/ Photometric Distribution	CCT	CRI	Lifetime (L_{70} at 15˚C)	Weight	Comparable To:
E-GL1S03C2W (white) **E-GL1S03C2K (black)**	38W LED Cool white	120V-277V	2000 Lumens	20˚ Spot	5700K	73	50,000 Hours	5 lbs	70W PSMH
E-GL1S03N2W (white) **E-GL1S03N2K (black)**	38W LED Neutral white	120V-277V	2000 Lumens	20˚ Spot	4100K	74	50,000 Hours	5 lbs	70W PSMH

Features

- 50,000 hours of maintenance-free operation to L_{70} at 15°C
- Non-dimmable
- Low copper, die-cast aluminum housing and lens frame
- Textured black or smooth white polyester powder-coat finish
- Tempered glass lens, thermal shock and impact resistant
- 1/2" NPS adjustable fitter included
- Universal voltage (120V through 277V)
- RoHS compliant
- Suitable for ground mounting, uplighting & downlighting
- Precise optical reflector
- Heat dissipating fins
- Minimum starting temperature: -40° F
- UL Listed for wet locations
- Cree® LEDs inside
- 3-year warranty

Accessories

None Available

PREMIUM LED DIRECTIONAL FLOODLIGHT 38-WATT LED (E-GL1F SERIES)

Applications – For accenting architecture or lighting landscape areas
Typical Mounting Height: 8 to 15 feet

TYPE F3

ARCHITECTURAL FEATURES AND LANDSCAPE ELEMENTS.





8-1/2"H x **6-1/4"**W x **7-3/4"**D (Height dimension includes fitter)

Catalog #	Description	Input Voltage	Delivered Lumen Output	Beam Angle/ Photometric Distribution	CCT	CRI	Lifetime (L_{70} at 15˚C)	Weight	Comparable To:
E-GL1F03C2W (white) **E-GL1F03C2K (black)**	38W LED Cool white	120V-277V	2000 Lumens	40˚ Flood	5700K	73	50,000 Hours	5 lbs	70W PSMH
E-GL1F03N2W (white) **E-GL1F03N2K (black)**	38W LED Neutral white	120V-277V	2000 Lumens	40˚ Flood	4100K	74	50,000 Hours	5 lbs	70W PSMH

Features

- 50,000 hours of maintenance-free operation to L_{70} at 15°C
- Non-dimmable
- Low copper, die-cast aluminum housing and lens frame
- Textured black or smooth white polyester powder-coat finish
- Tempered glass lens, thermal shock and impact resistant
- 1/2" NPS adjustable fitter included
- Universal voltage (120V through 277V)
- RoHS compliant
- Suitable for ground mounting, uplighting & downlighting
- Precise optical reflector
- Heat dissipating fins
- Minimum starting temperature: -40° F
- UL Listed for wet locations
- Cree® LEDs inside
- 3-year warranty

Accessories

None Available

TYPE G

PREMIUM LED WALL PACK - SMALL 36-WATT LED (E-WP6L SERIES)

Applications: Security, pathway and perimeter lighting; ideal for entryways and other applications where control of spill light is important.
Typical Mounting Height: 8 to 15 feet **Typical Spacing:** 1 to 2 times the mounting height

INSTALLED ON AT BUILDING AT EXITS AND GARAGES.



9.5"**D** x 8.75"**W** x 4.5"**H**
Weight: 7.0 lbs.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C [1]	Comparable To:
E-WP6L03CZ	36W LED Cool white	120V-277V	3350	5000K	70	50,000 Hours	100W PSMH
E-WP6L03NZ	36W LED Neutral white	120V-277V	3350	4000K	70	50,000 Hours	100W PSMH

[1] Calculated L_{70} based on 6,048 hours of LM-80 testing: >36,000 hours

Performance
- Estimated 50,000 hours of maintenance-free operation to L_{70}
- Minimum starting temperature: -40°F
- 5-year limited warranty

Electrical
- Non-dimmable
- 75°C minimum supply wire required
- Universal voltage (120V through 277V)

Construction & Materials
- Low copper, die-cast aluminum housing and lens frame
- Dark bronze polyester powder-coat finish
- Fixed cutoff glare shield to reduce light pollution
- Tempered glass lens, thermal shock and impact resistant
- Patented lens design delivers true IES Type III distribution
- Mounts over recessed junction box or with conduit
- Die-cast detachable back box for easy mounting
- Heat dissipating fins
- Conduit entries on all sides of the fixture
- Two knockouts provided on back for conduit or J-box mounting
- Cree® LEDs inside

Regulatory
- UL Listed for wet locations
- RoHS compliant

Accessories



CAT.# E-ACP1 (120 volts)
CAT.# E-ACP2 (208/240/277 volts)

Photocell is field installed.
For use with adjustable slip fitter only.

e-conolight®

Due to continuous product improvement, information in this document is subject to change. All published photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory. Fixture photometry was completed on a single representative fixture. Actual production units may vary up to ±10% of initial delivered lumens. Lumen maintenance values at 25°C (77°F) are calculated per TM-21 based on LM-80 data and in-situ fixture testing.

1501 96th Street, Sturtevant, WI 53177 | Phone (888)243-9445 | Fax (262)504-5409 | www.e-conolight.com

TYPE G1

LED DECORATIVE WALL SCONE - UP OR DOWN
16-WATT LED
(E-S12 SERIES)

Applications: Ideal for illumination along steps, walkways and entry ways
Typical Mounting Height: 8 to 15 feet **Typical Spacing:** 1 to 2 times the mounting height



CREE LEDs

6.1875"**L** x 4.875"**W** x 5.1875"**H**
Weight: 3.2 lbs.

INSTALLED ON BUILDING

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C [1]
E-S12L013U(*)	16W LED Warm White	120-277V	950	3000K	80	100,000+ Hours
E-S12L014U(*)	16W LED Neutral White	120-277V	95	4000K	80	100,000+ Hours

(*) Specify finish color. K=Black, W=White

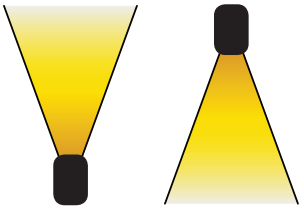
[1] Calculated L_{70} based on 6,048 hours of LM-80 testing: >36,000 hours

Performance
- Estimated 100,000+ hours of maintenance-free operation to L_{70}
- 3-year limited warranty

Construction & Materials
- Use as an uplight or downlight
- Die-cast aluminum mounting box with extruded aluminum housing-mounting box measures 5" square (5-3/8" square with gasket)
- Supplied with back mounting plate to mount over a 4" square or 4" octagonal junction box
- 25-degree beam spread
- Silicon gasket provides a water tight seal
- Polyester powder-coat black or white finish
- Tempered glass lens, thermal shock and impact resistant
- Cree® LEDs inside

Electrical
- Dimmable with most 0-10V dimmers
- Universal voltage (120V through 277V)

Regulatory
- ETL Listed for wet locations



E-S12 Series fixture mounted at 12 feet with 0° tilt.

e-conolight®

Due to continuous product improvement, information in this document is subject to change. All published photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory. Fixture photometry was completed on a single representative fixture. Actual production units may vary up to ±10% of initial delivered lumens. Lumen maintenance values at 25°C (77°F) are calculated per TM-21 based on LM-80 data and in-situ fixture testing.

1501 96th Street, Sturtevant, WI 53177 | Phone (888)243-9445 | Fax (262)504-5409 | www.e-conolight.com

TYPE G2

LED WALL MOUNT
14- & 22-WATT LED
(E-WW1L SERIES)

Applications: Security, entryways, stairways, storage and perimeter areas, as well as residential exteriors.
Typical Mounting Height: 8 to 12 feet **Typical Spacing:** 12 feet

INSTALLED AT TRASH ENCLOSURE



CREE LEDs

9"**D** x 5.75"**W** x 4"**H**
Weight: 2.0 lbs.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C[1]	Comparable To
E-WW1L11N(*)P	14W Neutral White	120V	1017	4000K	70+	91%	100W Incandescent
E-WW1L21N(*)P	22W Neutral White	120V	1228	4000K	70+	86%	120W Incandescent

(*) Specify finish color. M=Medium Bronze, W=White

[1] Calculated L_{70} based on 6,048 hours of LM-80 testing: >36,000 hours

Performance
- Estimated 172,000 **(22W)** 118,000 **(14W)** hours of maintenance-free operation to L_{70} at 25°C
- Minimum starting temperature: -40°C (-40°F)
- 5-year limited warranty

Construction & Materials
- Polycarbonate housing in bronze or white with heavy-duty aluminum mounting plate
- 1/2" NPT tapped back and bottom for conduit entrances
- UV-stabilized polycarbonate prismatic refractor
- Cree® LEDs inside

Electrical
- Non-dimmable
- 120V operation with built-in photocell

Regulatory
- UL Listed for wet locations

e-conolight®

Due to continuous product improvement, information in this document is subject to change. All published photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory. Fixture photometry was completed on a single representative fixture. Actual production units may vary up to ±10% of initial delivered lumens. Lumen maintenance values at 25°C (77°F) are calculated per TM-21 based on LM-80 data and in-situ fixture testing.

1501 96th Street, Sturtevant, WI 53177 | Phone (888)243-9445 | Fax (262)504-5409 | www.e-conolight.com

TYPE G3

LED DECORATIVE WALL SCONE - UP AND DOWN 30-WATT LED (E-S22 SERIES)

Applications: Ideal for illumination along steps, walkways and entry ways
Typical Mounting Height: 8 to 15 feet **Typical Spacing:** 1 to 2 times the mounting height

INSTALLED ON BUILDING





CREE LEDs

6.1875"**L** x 4.875"**W** x 7.1875"**H**
Weight: 4.2 lbs.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C [1]
E-S22L033U(*)	30W (total) LED Warm White	120-277V	1850 (total)	3000K	80	100,000+ Hours
E-S22L034U(*)	30W (total) LED Neutral White	120-277V	1850 (total)	4000K	80	100,000+ Hours

(*) Specify finish color. K=Black, W=White

[1] Calculated L_{70} based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- Estimated 100,000+ hours of maintenance-free operation to L_{70}
- 3-year limited warranty

Construction & Materials

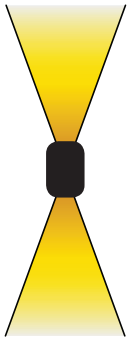
- Up and down fixture creates gorgeous hourglass lighting effect
- Die-cast aluminum mounting box with extruded aluminum housing-mounting box measures 5" square (5-3/8" square with gasket)
- Supplied with back mounting plate to mount over a 4" square or 4" octagonal junction box
- 25-degree beam spread
- Silicon gasket provides a water tight seal
- Polyester powder-coat black or white finish
- Tempered glass lens, thermal shock and impact resistant
- Cree® LEDs inside

Electrical

- Dimmable with most 0-10V dimmers
- Universal voltage (120V through 277V)

Regulatory

- ETL Listed for wet locations



E-S22 Series fixture mounted at 12 feet with 0° tilt.

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TYPE G4

LED GOOSENECK 15-WATT LED (E-DG1L SERIES)

Applications: Business storefronts, restaurants, and building perimeters that need an architectural touch of style
Typical Mounting Height: 8 to 15 feet

Straight Shroud



31.5"**L** x 15.3"**W** x 18.8"**H**
Weight: 5.0 lbs.

CREE LEDs

Angled Shroud



35"**L** x 15.3"**W** x 25.8"**H**
Weight: 5.0 lbs.

INSTALLED ON BUILDING AT ENTRY CANOPY.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C [1]	Comparable To:
E-DG1L13UAK	15W LED Warm White Angled Shroud	120V-277V	1100	3000K	≥70	88%	90W Incandescent
E-DG1L13USK	15W LED Warm White Straight Shroud	120V-277V	1260	3000K	≥70	88%	90W Incandescent

[1] Calculated L_{70} based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- Estimated 150,000+ hours of maintenance-free operation to L_{70}
- -30°C (-22°F) minimum starting temp
- 5-year limited warranty

Electrical

- Non-dimmable
- Universal voltage (120V through 277V)

Construction & Materials

- Die-cast aluminum mounting box and housing
- Supplied with back mounting plate to mount over a 4" square or octagonal j-box
- Black polyester powder-coat finish for extra corrosion protection and long-lasting color
- Tempered glass lens, thermal, shock and impact resistant
- Cree® LEDs inside

Regulatory

- ETL Listed for wet locations

e-conolight®

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TYPE M

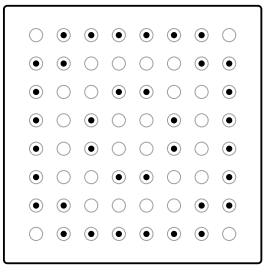
RECESSED LED CANOPY LIGHT - WIDE DISTRIBUTION
42-WATT LED
(E-RC2L04CW)

Applications: Security, entryway and perimeter lighting. Also recommended for walkways and exterior canopies
Typical Mounting Height: 8 to 15 feet **Typical Spacing:** 1 to 2 times the mounting height

INSTALLED ON UNDERSIDE OF ENTRY CANOPY



16"**D** x 16"**W** x 3.75"**H**
Weight: 6.2 lbs.



LED PATTERN

CREE LEDs

This fixture is listed on the DesignLights Consortium® Qualified Products List.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C [1]	Comparable To:
E-RC2L04CW	42W LED Cool White	120V-277V	4100	5000K	75	50,000 Hours	100W PSMH

[1] Calculated L_{70} based on 6,048 hours of LM-80 testing: >36,000 hours

Performance
- 50,000 hours of maintenance-free operation to L_{70}
- Minimum starting temperature: -22° F
- 5-year limited warranty

Electrical
- 0-10 Dimmer (See below for recommended dimmers)
- Universal voltage (120V through 277V)

Construction & Materials
- Rugged and durable aluminum housing
- UV-stabilized acrylic lens with molded precision optics
- Two 1/2" conduit entries on top for through wiring
- Hanging cable supports fixture while wiring connections are made
- Secures to mounting surface with four screws (provided by others)
- Cree® LEDs inside

Regulatory
- ETL Listed for wet locations
- Non-IC rated
- RoHS compliant

Recommended Dimmers
- **Lutron CTCL-153PDH-WH**
- **Lutron TGCL-153PH-WH**
- **Lutron MA-600MR-WH**
- **Leviton R50-IPL06-10M**

NOTE: The presence of a dimmer on this chart is not a guarantee or warranty of the compatibility of the fixture in any particular installation. The absence of a dimmer from this chart does not necessarily imply incompatibility.

e-conolight®

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HALO

TYPE N

INSTALLED ON UNDERSIDE OF BUILDING AT EXITS

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

DESCRIPTION

The Halo Surface LED Downlight (SLD) incorporates WaveStream™ technology to create an ultra-low profile surface mounting luminaire with the performance and look of a traditional downlight. SLD6 is designed for installation in many 3-1/2" and 4" square, octagon or round junction boxes. And may also retrofit in 5" and 6" IC and Non-IC recessed housings.* Suitable for residential or commercial installations. Ideal for closets, storage areas, attics and basements. Compliant with NFPA® 70, NEC® Section 410.16 (A)(3) and 410.16 (C)(5).

SPECIFICATION FEATURES

CONSTRUCTION

- Die cast aluminum trim ring, and die formed aluminum frame

OPTICS

- WaveStream™ technology provides uniform luminance from a low profile flat lens
- AccuAim™ optics provide directional control for the "cone-of-light" beam distribution of a traditional downlight.
- Precision molded lens features high transmission polymer with UV stabilized protecting film

DESIGNER TRIMS

Accessories (sold separately)

SLD designer trims are accessory rings that attach to the SLD for a permanent finish.* Refer to SLD accessories specification sheet for details.

- White (Paintable)
- Satin Nickel
- Tuscan Bronze

*SLD accessory trims attach with permanent adhesion and are not interchangeable after installation.

ELECTRICAL JUNCTION BOX MOUNTING

- SLD may be used in compatible electrical junction boxes in direct contact with insulation including spray foam insulation
- Suitable for installation in many 3-1/2" and 4" square, octagon, and round electrical junction boxes
  Note: Driver consumes 3 cubic inches of junction box
- Surface mounting in a fire-rated ceiling using an appropriate electrical box offers a cost-effective alternative to fire-rated recessed housings
  Note: Fire-rating is per the rating of the ceiling and applicable junction box, not the SLD.
- Installer must ensure compatibility of fit, wiring and proper mounting in the electrical junction box. This includes all applicable national and local electrical and building codes.
- Proprietary Slot-N-Lock quick installation system for junction box installation
- T-bracket with Slot-N-Lock mounting tabs included

RECESSED HOUSING MOUNTING

- May be installed in IC recessed housings in direct contact with insulation

* **Note:** Not for use in recessed housings in direct contact with spray foam insulation. Refer to NEMA LSD 57-2013

Torsion Spring 5" & 6"

- Optional precision formed torsion spring bracket kit is included
- The torsion springs adjust on the frame to fit 5" or 6" compatible housings

Friction Blade 5" & 6"

- Optional precision formed friction blades included
- For retrofit in 5" and 6" housings without torsion spring mounting tabs
- Friction blade design allows the SLD to be installed in any position within the housing aperture (360 degrees)

LED

- Linear LED arrays are integrated in trim perimeter
- Color Temperature: 2700K, 3000K, 3500K, 4000K
- CRI options: 80 and 90
  - 90 CRI can be used for California Title 24 compliance/ certified to Title 20
  - 80 CRI can be used to comply with California Title 24 Non-Residential Lighting Controls as a LED luminaire.

WARRANTY

Cooper Lighting provides a five year limited warranty on the SLD LED

LED CHROMATICITY

- A tight chromaticity specification ensures LED color uniformity, sustainable Color Rendering Index (CRI) and Correlated Color Temperature (CCT) over the useful life of the LED
- LED chromaticity of 3 SDCM exceeds ENERGY STAR® color standards per ANSI.
- 90 CRI model features high color performance with R9 greater than 50
- Every Halo LED is quality tested, measured, and serialized in a permanent record to register lumens, wattage, CRI and CCT.
- Halo LED serialized testing and measurement ensures color and lumen consistency on a per-unit basis, and validates long-term product consistency over time

ELECTRICAL CONNECTIONS

Junction Box

- Compatible with 3-1/2" x 2" and 4" x 1-1/2" deep round, square and octagon boxes (2-1/8" deep boxes recommended)
- Supply Wire Adapter with LED quick connector included

Recessed Housings

- LED connector is compatible with Halo 5" H550 Series and 6" H750 Series LED Housings
- LED Connector meets California Title-24 high-efficacy luminaire standard as a non-screw base
- The included E26 Edison screw-base adapter provides capability for retrofit
- LED connector is a non-screwbase luminaire disconnect for tool-less installation

80 CRI nominal CCT 2700K 3000K 3500K 4000K

ENERGY STAR | IECC | T24 | WSEC | RoHS Compliant | airtight | Showerlight

Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 Non-Residential Lighting Controls requirements as a LED Luminaire.

90 CRI nominal CCT 2700K 3000K 3500K 4000K

ENERGY STAR | IECC | T24 Can be used to comply with California Title 24 High Efficacy requirements | T20 Certified to California Title 20 Appliance Database | WSEC | RoHS Compliant | airtight | Showerlight

Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 High Efficacy requirements.
Certified to California Title 20 Appliance Efficiency Database.



SLD 1200 Series

SLD6128xxWH
80CRI
2700K, 3000K, 3500K, and 4000K

SLD6129xxWH
90CRI
2700K, 3000K, 3500K, and 4000K

6" Surface LED Downlight

High Lumen 1200 Series

Suitable for ceiling or wall electrical junction boxes

Suitable for 5" & 6" recessed housing retrofit (IC, Non-IC & AIR-TITE™)

ENERGY DATA

	80 CRI	90 CRI
Lumens (4000K models)	1215	1000
Input Voltage	120V	120V
Frequency	50/60 Hz	50/60 Hz
Input Current	0.12 A	0.12 A
Input Power	14.8 W	14.8 W
Efficiency (4000K models)	82 lm/W	68 lm/W
THD	≤ 20%	
Power Factor	≥ 0.90	
T Ambient	-30 - +40°C	
Sound Rating	Class A	

NOMENCLATURE

SLD 612 8 30 WH
612 = 6" SLD 1200 Series
8 = >80 CRI
30 = 3000K
WH = Matte White

Powering Business Worldwide

HALO

TYPE N

SLD6128xxWH
SLD6129xxWH

LED DRIVER
- Driver is a 120V input, high efficiency, dimmable electronic power supply providing DC power to the LED arrays
- Driver features high power factor, low THD, and has integral thermal protection in the event of over temperature or internal failure
- Driver is replaceable if it should be required

DIMMING
- Designed for continuous dimming capability to nominally 5% with many 120V Leading Edge (LE) and Trailing Edge (TE) phase control dimmers. Dimming to 5% is best assured using dimmers with low end trim adjustment. Consult dimmer manufacturer for compatibility and conditions of use. (Note some dimmers require a neutral in the wallbox.)

COMPLIANCE
- cULus Listed ceiling and wall
- cULus Damp Location listed ceiling and wall
- cULus Wet Location Listed, ceiling only (shower rated)
- Suitable for use in closets, compliant with NFPA® 70, NEC® Section 410.16 (A)(3) and 410.16 (C)(5)
- SLD may be used in compatible electrical junction boxes in direct contact with insulation including spray foam insulation
- May be installed in IC recessed housings in direct contact with insulation (Not for use in recessed housings in direct contact with spray foam insulation. Refer to NEMA LSD 57-2013)
- UL Classified when used in retrofit with listed housings (See Housing Compatibility)
- EMI/RFI: meets FCC 47CFR Part 15 Class B limits, and is suitable for use in residential and commercial installations
- Airtight certified per ASTM E283 (not exceeding 2.0 CFM under 57 Pascals pressure difference)
- 90 CRI: Can be used to comply with California Title 24 High Efficacy requirements. Certified to California Title 20 Appliance Efficiency Database.
- 80 CRI: Can be used to comply with California Title 24 Non-Residential Lighting Controls requirements as a LED luminaire.
- Can be used for International Energy Conservation Code (IECC) and Washington State Energy Code high efficiency luminaire compliance
- ENERGY STAR® certified luminaire - consult ENERGY STAR® Certified Product List
- Contains no mercury or lead and RoHS compliant.
- Photometric testing in accordance with IES LM-79
- Lumen maintenance projections in accordance with IES LM-80 and TM-21



SLD 1200 Series

SLD6128xxWH
80CRI
2700K, 3000K, 3500K, and 4000K

SLD6129xxWH
90CRI
2700K, 3000K, 3500K, and 4000K

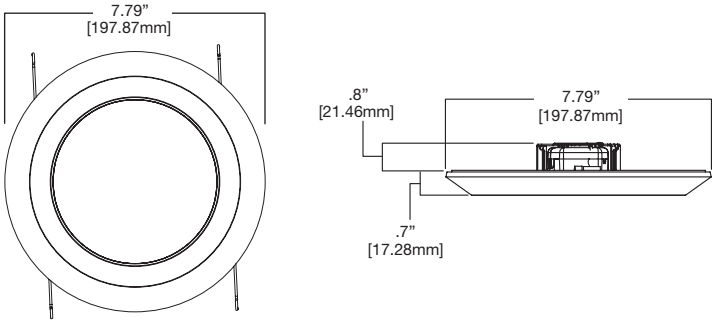
6" Surface LED Downlight

High Lumen 1200 Series

Suitable for ceiling or wall electrical junction boxes

Suitable for 5" & 6" recessed housing retrofit (IC, Non-IC & AIR-TITE™)

DIMENSIONS



ORDERING INFORMATION

SAMPLE NUMBER: SLD612927WH SLD6TRMSN
Junction Box Installation: Order junction box separately, as supplied by others, to complete installation.
Recessed Installation: Order Halo recessed housing separately to complete installation.

Models	Color Rendering Index	Color Temperature (CCT)	Finish	Accessories
SLD612= 6" Surface LED Downlight, 120V 1200 Series	**8**=80 CRI **9**=90 CRI	**27**=2700K **30**=3000K **35**=3500K **40**=4000K	**WH**=White	Designer Trims Fit over the SLD for a designer finish **SLD6TRMSN**=6" SLD Satin Nickel **SLD6TRMTBZ**=6" SLD Tuscan Bronze **SLD6TRMWH**=6" SLD White (paintable) *SLD accessory trims attach with permanent adhesion and are not interchangable after installation J-Box Spacer Extension Ring Add 15/16" depth when SLD driver cannot fit into installed junction box **SLD6EXT**=6" Surface LED J-Box Extender, 9.5" O.D. RAD Adapters When junction box is mounted flat on a ceiling or beam surface (not recessed in ceiling) **SLD6RAD**=6" SLD Round Surface J-Box Adapter, 7.92" O.D. (for 4-inch round or octagon junction boxes.) **SLD6SADPLT**=6" SLD Square Surface J-Box Adapter Plate (For 4-inch square junction boxes, use with SLD6RAD.) Spare Parts **SLD6ACCKIT**=6" Accessory Parts Replacement Kit (Screwbase adapter, torsion springs, friction blades) **SLD6BRKT**=6" Junction Box Bracket & Screws Refer to SLD Accessories specification sheet for further information.

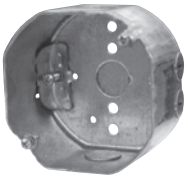
HOUSING COMPATIBILITY

The SLD6 is UL Listed in Halo and All-Pro recessed housings, and is UL Classified for use with **any** 5 or 6 inch diameter recessed housing constructed of steel or aluminum with an internal volume that exceeds 107.9 in^3 in addition to those noted below.
Note: Some other's housings require installation with included friction clips.

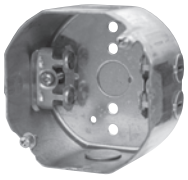
Compatible Halo LED Housings with LED luminaire connector (high-efficacy compliant)		
HALO LED	**Recessed Can Size**	**Catalog Number**
	5"	H550ICAT, H550RICAT
	6"	H750ICAT, H750RICAT, H750T, H750TCP, H2750ICAT
Halo LED Retrofit Enclosures		
HALO	**6"**	ML7BXRFK, ML7E26RFK
Compatible Halo Incandescent E26 Screwbase Housings		
HALO	**5"**	H5ICAT, H5RICAT, H5T, H5RT, H5TM, H25ICAT
	6"	H7ICAT, H7RICAT, H7ICT, H7RICT, H7ICATNB, H7ICTNB, H7T, H7RT, H7TNB, H7TCP, H7UICT, H7UICAT, H27ICAT, H27RICAT, H27ICT, H27RICT, H27T, H27RT
Compatible All-Pro Incandescent E26 Screwbase Housings		
ALL-PRO	**5"**	EI500AT, EI500RAT, ET500, ET500R
	6"	EI700AT, EI700RAT, EI700, EI700R, EI700ATNB, EI700NB, EI700U, EI700UAT, ET700, ET700R, EI2700AT, EI2700, EI2700R, ET2700, ET2700R

COMPATIBLE WITH EATON'S CROUSE-HINDS JUNCTION BOXES

TYPE N



TP316
for non-metallic cable
4" x 4" x 2-1/8"
(102mm x 102mm x 54mm)



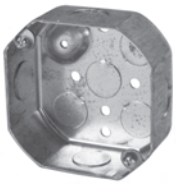
TP317
for metal clad cable
4" x 4" x 2-1/8"
(102mm x 102mm x 54mm)

- **TP316 -** for non-metallic cable
- **TP317 -** for metal clad cable
- UL Listed
- Suitable for two-hour fire-rated ANSI/UL 263 when properly installed in a fire-rated ceiling or wall
- Refer to www.crouse-hinds.com

COMPATIBLE WITH MANY OTHER JUNCTION BOXES*



4" octagon light fixture/fan steel box
4" x 4" x 2-1/8"
(102mm x 102mm x 54mm)



4" octagon steel box
4" x 4" x 1-1/2"
(102mm x 102mm x 38mm)



4" square deep steel box
4" x 4" x 2-1/8"
(102mm x 102mm x 54mm)



4" square standard steel box
4" x 4" x 1-1/2"
(102mm x 102mm x 38mm)



4" round new work non-metallic light fixture/ fan box
4" diameter x 2-3/16"
(102mm x 56mm)



3-1/2" round new work non-metallic ceiling box
3-1/2" diameter x 2-3/4"
(89mm x 70mm)



3-1/2" round old work non-metallic box
4-1/4" O.D. flange, 3-1/2" I.D. x 2-5/8"
(108mm O.D., 89mm I.D. x 67mm)



4" round surface mount box
4" diameter x 1-1/2"
(102mm x 38mm)
Requires SLD6RAD adapter



4" round new work non-metallic box with hanger bar assembly
4" diameter x 2-3/16" (102mm x 56mm)

Surface mounting in a fire-rated ceiling using an appropriate electrical box offers a cost-effective alternative to fire-rated recessed housings.
Note: Fire-rating is per the rating of the ceiling and applicable junction box, not the SLD.

*This is a representative list of compatible junction boxes only. Information contained in this literature about other manufacturers' products is from published information made available by the manufacturer and is deemed to be reliable, but has not been verified. Eaton makes no specific recommendation on product selection and there are no warranties of performance or compatibility implied. Installer must determine that site conditions are suitable to allow proper installation of the SLD mounting bracket in the box.

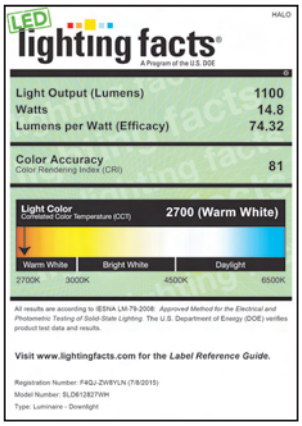
PRODUCT DATA

Cat No.	CRI	CCT	Lumens	Power (W)	LPW
SLD612827WH	80	2700	1100	14.8	74
SLD612830WH	80	3000	1150	14.8	78
SLD612835WH	80	3500	1200	14.8	81
SLD612840WH	80	4000	1215	14.8	82
SLD612927WH	92	2700	880	14.8	59
SLD612930WH	92	3000	925	14.8	63
SLD612935WH	92	3500	965	14.8	65
SLD612940WH	92	4000	1000	14.8	68

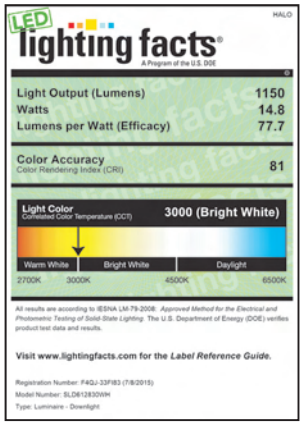
Performance values are presented as typical for the model(s) indicated. Field results may vary.

LIGHTING FACTS®

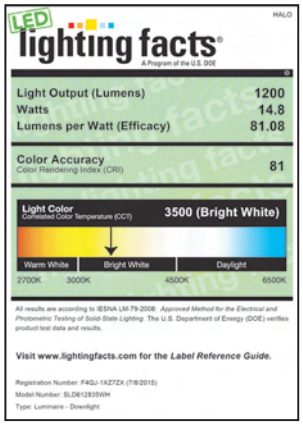
SLD612827WH - 80 CRI



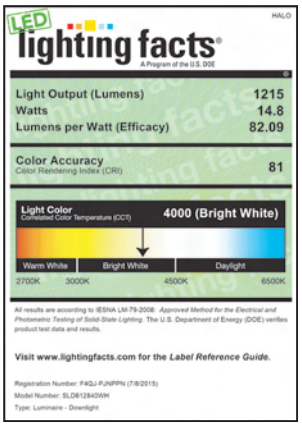
SLD612830WH - 80 CRI



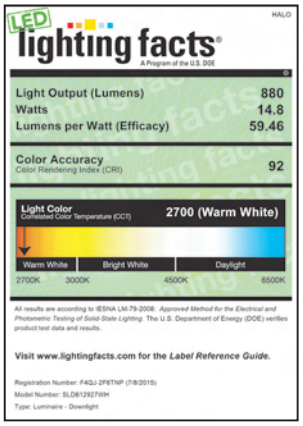
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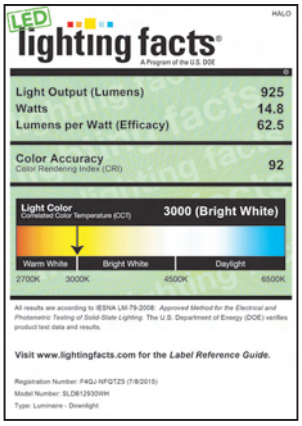
SLD612840WH - 80 CRI



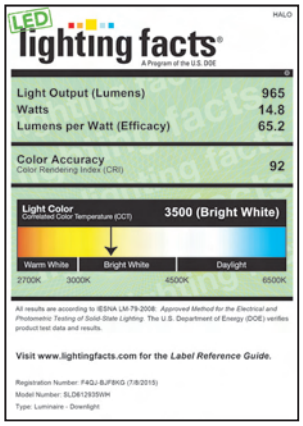
SLD612927WH - 90 CRI



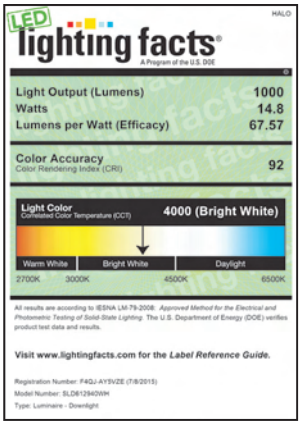
SLD612930WH - 90 CRI



SLD612935WH - 90 CRI



SLD612940WH - 90 CRI



TYPE Q1

INSTALLED AT SUITE DECKS. NOT SHOWN ON PLANS.



V8870-5 Black
V8870-6 White
Frosted Ribbed Glass
10" W x 10" H x 5 1/2" E
1(M) 100w max.



D-Series Size 0
LED Area Luminaire

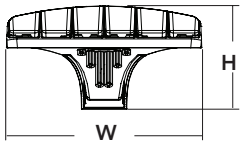
Catalog Number

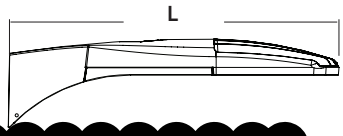
Notes

Type

Hit the Tab key or mo

TYPE T1/T1H





Specifications

EPA:	0.8 ft² (.07 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)

MAIN PARKING LOT LIGHTING

Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 65% and expected service life of over 100,000 hours.

Ordering Information

EXAMPLE: DSX0 LED 40C 1000 40K T3M MVOLT SPA DDBXD

DSX0 LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** 20C 20 LEDs (one engine) 40C 40 LEDs (two engines) **Rotated optics**[1] 30C 30 LEDs (one engine)	530 530 mA 700 700 mA 1000 1000 mA (1 A)[2]	30K 3000 K (80 CRI min.) 40K 4000 K (70 CRI min.) 50K 5000 K (70 CRI) AMBPC Amber phosphor converted[3]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide	MVOLT[4] 120[4] 208[4] 240[4] 277[4] 347[5] 480[5]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[6] RPUMBA Round pole universal mounting adaptor[6] **Shipped separately**[7] KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)

TYPE T1H ONLY

Control options		Other options		Finish *(required)*	
Shipped installed		**Shipped installed**			
PER	NEMA twist-lock receptacle only (no controls)[8]	BL30	Bi-level switched dimming, 30%[13,14]	HS	House-side shield[16]	DDBXD	Dark bronze
PER5	Five-wire receptacle only (no controls)[8,9]	BL50	Bi-level switched dimming, 50%[13,14]	SF	Single fuse (120, 277, 347V)[17]	DBLXD	Black
PER7	Seven-wire receptacle only (no controls)[8,9]	PNMTDD3	Part night, dim till dawn[15]	DF	Double fuse (208, 240, 480V)[17]	DNAXD	Natural aluminum
DMG	0-10V dimming driver (no controls)[10]	PNMT5D3	Part night, dim 5 hrs[15]	L90	Left rotated optics[1]	DWHXD	White
DCR	Dimmable and controllable via ROAM® (no controls)[11]	PNMT6D3	Part night, dim 6 hrs[15]	R90	Right rotated optics[1]	DDBTXD	Textured dark bronze
PIR	Motion sensor, 8-15' mounting height[12]	PNMT7D3	Part night, dim 7 hrs[15]	DDL	Diffused drop lens[16]	DBLBXD	Textured black
PIRH	Motion sensor, 15-30' mounting height[12]					DNATXD	Textured natural aluminum
						DWHGXD	Textured white

Accessories *Ordered and shipped separately.*

Controls & Shields

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V)[18]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V)[18]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V)[18]
SC U	Shorting cap[18]
DSX0HS 20C U	House-side shield for 20 LED unit[16]
DSX0HS 30C U	House-side shield for 30 LED unit[16]
DSX0HS 40C U	House-side shield for 40 LED unit[16]
DSX0DDL U	Diffused drop lens (polycarbonate)[16]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish)
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish)[7]

For more control options, visit DTL and ROAM online.

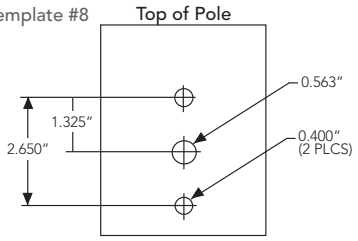
NOTES

1. 30 LEDs (30C option) and rotated options (L90 or R90) only available together.
2. 1000mA not available with AMBPC.
3. AMBPC only available with 530mA or 700mA.
4. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120V, 208V, 240V or 277V options only when ordering with fusing (SF, DF options).
5. Not available with single board, 530mA product (20C 530 or 30C 530). Not available with BL30, BL50 or PNMT options.
6. Available as a separate combination accessory: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
7. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
8. Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories.
9. If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Not available with DCR.
10. DMG option for 347V or 480V requires 1000mA.
11. Specifies a ROAM® enabled luminaire with 0-10V dimming capability; PER option required. Additional hardware and services required for ROAM® deployment; must be purchased separately. Call 1-800-442-6745 or email: sales@roamservices.net. N/A with PIR, PIRH, PER5, PER7, BL30, BL50 or PNMT options.
12. PIR specifies the SensorSwitch SBGR-10-ODP control; PIRH specifies the SensorSwitch SBGR-6-ODP control; see Motion Sensor Guide for details. Dimming driver standard. Not available with PER5 or PER7.
13. Requires an additional switched circuit.
14. Dimming driver standard. MVOLT only. Not available with 347V, 480V, DCR, PER5, PER7 or PNMT options.
15. Dimming driver standard. MVOLT only. Not available with 347V, 480V, DCR, PER5, PER7, BL30 or BL50.
16. Also available as a separate accessory; see Accessories information.
17. Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
18. Requires luminaire to be specified with PER option. Ordered and shipped as a separate line item from Acuity Brands Controls.

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Drilling

Template #8



DSX0 shares a unique drilling pattern with the AERIS™ family. Specify this drilling pattern when specifying poles, per the table below.

DM19AS	Single unit	**DM29AS**	2 at 90° *
DM28AS	2 at 180°	**DM39AS**	3 at 90° *
DM49AS	4 at 90° *	**DM32AS**	3 at 120° **

Example: SSA 20 4C **DM19AS** DDBXD

Visit Lithonia Lighting's POLES CENTRAL to see our wide selection of poles, accessories and educational tools.

*Round pole top must be 3.25" O.D. minimum.

**For round pole mounting (RPA) only.

Tenon Mounting Slipfitter **

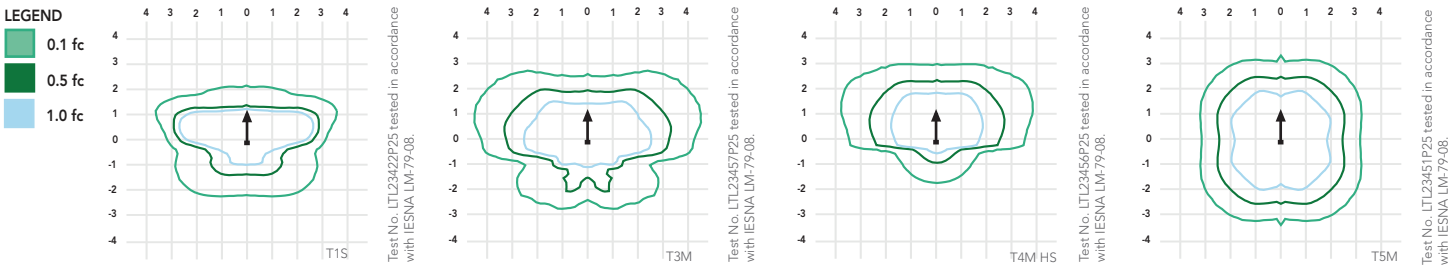
Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

TYPE T1/T1H

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	1.00
40°C	104°F	0.99

Electrical Load

			Current (A)					
Number of LEDs	Drive Current (mA)	System Watts	120	208	240	277	347	480
20C	530	35	0.34	0.22	0.21	0.20	--	--
	700	45	0.47	0.28	0.24	0.22	0.18	0.14
	1000	72	0.76	0.45	0.39	0.36	0.36	0.26
30C	530	52	0.51	0.31	0.28	0.25	--	--
	700	70	0.72	0.43	0.37	0.34	0.25	0.19
	1000	104	1.11	0.64	0.56	0.49	0.47	0.34
40C	530	68	0.71	0.41	0.36	0.33	0.25	0.19
	700	91	0.94	0.55	0.48	0.42	0.33	0.24
	1000	138	1.45	0.84	0.73	0.64	0.69	0.50

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	DSX0 LED 20C 1000			
	1	0.97	0.94	0.90
	DSX0 LED 40C 1000			
	1	0.94	0.90	0.84
	DSX0 LED 40C 700			
	1	0.99	0.98	0.96

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	530 mA	35 W	T1S	3,174	1	0	1	91	3,971	1	0	1	113	4,001	1	0	1	114	2,541	1	0	1	73
			T2S	3,234	1	0	1	92	4,045	1	0	1	116	4,075	1	0	1	116	2,589	1	0	1	74
			T2M	3,171	1	0	1	91	3,967	1	0	1	113	3,997	1	0	1	114	2,539	1	0	1	73
			T3S	3,195	1	0	1	91	3,997	1	0	1	114	4,027	1	0	1	115	2,558	1	0	1	73
			T3M	3,226	1	0	1	92	4,036	1	0	1	115	4,066	1	0	1	116	2,583	1	0	1	74
			T4M	3,210	1	0	1	92	4,015	1	0	1	115	4,045	1	0	1	116	2,570	1	0	1	73
			TFTM	3,173	1	0	1	91	3,969	1	0	2	113	3,999	1	0	2	114	2,540	1	0	1	73
			T5VS	3,310	2	0	0	95	4,140	2	0	0	118	4,172	2	0	0	119	2,650	1	0	0	76
			T5S	3,360	2	0	2	96	4,203	2	0	0	120	4,235	2	0	0	121	2,690	1	0	0	77
			T5M	3,320	2	0	1	95	4,153	3	0	1	119	4,184	3	0	1	120	2,658	2	0	0	76
			T5W	3,327	3	0	1	95	4,161	3	0	1	119	4,193	3	0	1	120	2,663	2	0	1	76
	700 mA	45 W	T1S	3,927	1	0	1	87	4,913	1	0	1	109	4,950	1	0	1	110	3,144	1	0	1	70
			T2S	4,000	1	0	1	89	5,004	1	0	1	111	5,042	1	0	1	112	3,203	1	0	1	71
			T2M	3,924	1	0	1	87	4,908	1	0	1	109	4,945	1	0	1	110	3,141	1	0	1	70
			T3S	3,953	1	0	1	88	4,945	1	0	1	110	4,982	1	0	1	111	3,165	1	0	1	70
			T3M	3,991	1	0	1	89	4,994	1	0	2	111	5,031	1	0	2	112	3,196	1	0	1	71
			T4M	3,971	1	0	1	88	4,967	1	0	2	110	5,005	1	0	2	111	3,179	1	0	1	71
			TFTM	3,925	1	0	2	87	4,910	1	0	2	109	4,947	1	0	2	110	3,143	1	0	1	70
			T5VS	4,095	2	0	0	91	5,122	2	0	0	114	5,161	2	0	0	115	3,278	2	0	0	73
			T5S	4,157	2	0	0	92	5,200	2	0	0	116	5,239	2	0	0	116	3,328	2	0	0	74
			T5M	4,107	3	0	1	91	5,138	3	0	1	114	5,177	3	0	1	115	3,288	2	0	1	73
			T5W	4,116	3	0	1	91	5,148	3	0	1	114	5,187	3	0	1	115	3,295	2	0	1	73
	1000 mA	72 W	T1S	5,387	1	0	1	75	6,739	2	0	2	94	6,790	2	0	2	94					
			T2S	5,488	1	0	1	76	6,865	2	0	2	95	6,917	2	0	2	96					
			T2M	5,382	1	0	2	75	6,733	2	0	2	94	6,784	2	0	2	94					
			T3S	5,423	1	0	1	75	6,784	2	0	2	94	6,835	2	0	2	95					
			T3M	5,475	1	0	2	76	6,850	2	0	2	95	6,901	2	0	2	96					
			T4M	5,447	1	0	2	76	6,814	2	0	2	95	6,866	2	0	2	95					
			TFTM	5,385	1	0	2	75	6,736	1	0	2	94	6,787	1	0	2	94					
			T5VS	5,617	2	0	0	78	7,027	3	0	0	98	7,080	3	0	0	98					
			T5S	5,702	2	0	0	79	7,133	2	0	0	99	7,187	2	0	0	100					
			T5M	5,634	3	0	1	78	7,048	3	0	1	98	7,101	3	0	1	99					
			T5W	5,646	3	0	1	78	7,063	3	0	2	98	7,116	3	0	2	99					
40C (40 LEDs)	530 mA	68 W	T1S	6,093	2	0	2	90	7,622	2	0	2	112	7,679	2	0	2	113	4,878	1	0	1	72
			T2S	6,207	2	0	2	91	7,764	2	0	2	114	7,823	2	0	2	115	4,969	1	0	1	73
			T2M	6,087	2	0	2	90	7,615	2	0	2	112	7,672	2	0	2	113	4,874	1	0	1	72
			T3S	6,133	1	0	2	90	7,672	2	0	2	113	7,730	2	0	2	114	4,910	1	0	1	72
			T3M	6,193	2	0	2	91	7,747	2	0	2	114	7,805	2	0	2	115	4,958	1	0	2	73
			T4M	6,161	1	0	2	91	7,707	2	0	2	113	7,765	2	0	2	114	4,932	1	0	2	73
			TFTM	6,090	1	0	2	90	7,618	2	0	2	112	7,676	2	0	2	113	4,876	1	0	2	72
			T5VS	6,353	2	0	0	93	7,947	3	0	0	117	8,007	3	0	0	118	5,086	2	0	0	75
			T5S	6,449	2	0	0	95	8,068	3	0	1	119	8,128	3	0	1	120	5,163	2	0	0	76
			T5M	6,372	3	0	1	94	7,971	3	0	2	117	8,031	3	0	2	118	5,102	3	0	1	75
			T5W	6,385	3	0	2	94	7,988	3	0	2	117	8,048	3	0	2	118	5,112	3	0	1	75
	700 mA	91 W	T1S	7,752	2	0	2	85	9,697	2	0	2	107	9,770	2	0	2	107	6,206	2	0	2	68
			T2S	7,897	2	0	2	87	9,878	2	0	2	109	9,953	2	0	2	109	6,322	2	0	2	69
			T2M	7,745	2	0	2	85	9,688	2	0	2	106	9,761	2	0	2	107	6,201	2	0	2	68
			T3S	7,803	2	0	2	86	9,761	2	0	2	107	9,834	2	0	2	108	6,247	1	0	2	69
			T3M	7,879	2	0	2	87	9,856	2	0	2	108	9,930	2	0	2	109	6,308	2	0	2	69
			T4M	7,838	2	0	2	86	9,805	2	0	2	108	9,879	2	0	2	109	6,275	1	0	2	69
			TFTM	7,748	2	0	2	85	9,693	2	0	3	107	9,765	2	0	3	107	6,203	1	0	2	68
			T5VS	8,083	3	0	0	89	10,111	3	0	1	111	10,187	3	0	1	112	6,569	2	0	0	72
			T5S	8,205	3	0	1	90	10,264	3	0	1	113	10,341	3	0	1	114	6,569	2	0	0	72
			T5M	8,107	3	0	2	89	10,142	3	0	2	111	10,218	3	0	2	112	6,491	3	0	1	71
			T5W	8,124	3	0	2	89	10,163	4	0	2	112	10,239	4	0	2	113	6,504	3	0	2	71
	1000 mA	138 W	T1S	10,435	2	0	2	76	13,054	3	0	3	95	13,152	3	0	3	95					
			T2S	10,630	2	0	2	77	13,297	3	0	3	96	13,398	3	0	3	97					
			T2M	10,426	2	0	2	76	13,042	3	0	3	95	13,140	3	0	3	95					
			T3S	10,503	2	0	2	76	13,139	2	0	2	95	13,238	2	0	2	96					
			T3M	10,606	2	0	2	77	13,267	3	0	3	96	13,367	3	0	3	97					
			T4M	10,551	2	0	2	76	13,199	3	0	3	96	13,298	3	0	3	96					
			TFTM	10,430	2	0	3	76	13,047	2	0	3	95	13,146	2	0	3	95					
			T5VS	10,881	3	0	1	79	13,611	3	0	1	99	13,714	4	0	1	99					
			T5S	11,045	3	0	1	80	13,817	3	0	1	100	13,921	3	0	1	101					
			T5M	10,914	4	0	2	79	13,652	4	0	2	99	13,755	4	0	2	100					
			T5W	10,936	4	0	2	79	13,680	4	0	2	99	13,783	4	0	2	100					

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Performance Data

L90 and R90 Rotated Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30C (30 LEDs)	530 mA	52 W	T1S	4,797	2	0	2	92	6,001	2	0	2	115	6,046	2	0	2	116	3,841	2	0	2	74
			T2S	4,887	2	0	2	94	6,113	2	0	2	118	6,159	3	0	3	118	3,912	2	0	2	75
			T2M	4,793	2	0	2	92	5,996	3	0	3	115	6,041	3	0	3	116	3,837	2	0	2	74
			T3S	4,829	2	0	2	93	6,041	3	0	3	116	6,086	3	0	3	117	3,866	2	0	2	74
			T3M	4,876	3	0	3	94	6,099	3	0	3	117	6,145	3	0	3	118	3,904	2	0	2	75
			T4M	4,851	3	0	3	93	6,068	3	0	3	117	6,114	3	0	3	118	3,884	2	0	2	75
			TFTM	4,795	3	0	3	92	5,998	3	0	3	115	6,043	3	0	3	116	3,839	2	0	2	74
			T5VS	5,002	2	0	0	96	6,258	2	0	0	120	6,305	2	0	0	121	4,005	2	0	0	77
			T5S	5,078	2	0	0	98	6,352	2	0	0	122	6,400	2	0	0	123	4,065	2	0	0	78
			T5M	5,017	3	0	1	96	6,276	3	0	1	121	6,324	3	0	1	122	4,017	2	0	1	77
			T5W	5,028	3	0	1	97	6,289	3	0	2	121	6,337	3	0	2	122	4,025	3	0	1	77
	700 mA	70 W	T1S	5,975	2	0	2	85	7,474	3	0	3	107	7,530	3	0	3	108	4,783	2	0	2	68
			T2S	6,086	2	0	2	87	7,614	3	0	3	109	7,671	3	0	3	110	4,873	2	0	2	70
			T2M	5,969	3	0	3	85	7,467	3	0	3	107	7,524	3	0	3	107	4,779	2	0	2	68
			T3S	6,014	3	0	3	86	7,523	3	0	3	107	7,580	3	0	3	108	4,815	2	0	2	69
			T3M	6,072	3	0	3	87	7,596	3	0	3	109	7,654	3	0	3	109	4,862	3	0	3	69
			T4M	6,041	3	0	3	86	7,557	3	0	3	108	7,614	3	0	3	109	4,837	3	0	3	69
			TFTM	5,972	3	0	3	85	7,471	3	0	3	107	7,527	3	0	3	108	4,781	3	0	3	68
			T5VS	6,230	2	0	0	89	7,793	3	0	0	111	7,852	3	0	0	112	4,988	2	0	0	71
			T5S	6,324	2	0	0	90	7,911	3	0	1	113	7,971	3	0	1	114	5,063	2	0	0	72
			T5M	6,249	3	0	1	89	7,817	3	0	2	112	7,876	3	0	2	113	5,003	3	0	1	71
			T5W	6,262	3	0	2	89	7,833	3	0	2	112	7,892	3	0	2	113	5,013	3	0	1	72
	1000 mA	104 W	T1S	7,956	3	0	3	76	9,952	3	0	3	96	10,027	3	0	3	96					
			T2S	8,104	3	0	3	78	10,138	3	0	3	97	10,214	3	0	3	98					
			T2M	7,949	3	0	3	76	9,943	3	0	3	96	10,018	3	0	3	96					
			T3S	8,008	3	0	3	77	10,018	3	0	3	96	10,093	3	0	3	97					
			T3M	8,086	3	0	3	78	10,115	4	0	4	97	10,191	4	0	4	98					
			T4M	8,044	3	0	3	77	10,063	3	0	3	97	10,139	3	0	3	97					
			TFTM	7,952	3	0	3	76	9,948	3	0	3	96	10,022	4	0	4	96					
			T5VS	8,296	3	0	0	80	10,377	3	0	1	100	10,455	3	0	1	101					
			T5S	8,421	3	0	1	81	10,534	3	0	1	101	10,613	3	0	1	102					
			T5M	8,321	3	0	2	80	10,409	4	0	2	100	10,487	4	0	2	101					
			T5W	8,338	4	0	2	80	10,430	4	0	2	100	10,509	4	0	2	101					

FEATURES & SPECIFICATIONS

INTENDED USE
The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.8 ft^2) for optimized pole wind loading.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 4000 K (70 minimum CRI) or optional 3000 K (80 minimum CRI) or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L96/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV or 6kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern. Optional terminal block, tool-less entry, and NEMA photocontrol receptacle are also available.

LISTINGS
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY
Five-year limited warranty. Full warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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D-Series Size 0
LED Area Luminaire

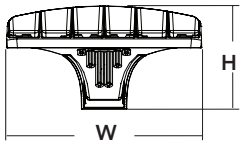
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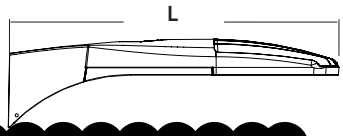
Notes

Type

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TYPE T2/T2H





Specifications

EPA:	0.8 ft² (.07 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)

MAIN PARKING LOT LIGHTING

Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 65% and expected service life of over 100,000 hours.

Ordering Information

EXAMPLE: DSX0 LED 40C 1000 40K T3M MVOLT SPA DDBXD

DSX0 LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** 20C 20 LEDs (one engine) 40C 40 LEDs (two engines) **Rotated optics**[1] 30C 30 LEDs (one engine)	530 530 mA 700 700 mA 1000 1000 mA (1 A)[2]	30K 3000 K (80 CRI min.) 40K 4000 K (70 CRI min.) 50K 5000 K (70 CRI) AMBPC Amber phosphor converted[3]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide	MVOLT[4] 120[4] 208[4] 240[4] 277[4] 347[5] 480[5]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[6] RPUMBA Round pole universal mounting adaptor[6] **Shipped separately**[7] KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)

TYPE T2H ONLY

Control options

Shipped installed

PER	NEMA twist-lock receptacle only (no controls)[8]
PER5	Five-wire receptacle only (no controls)[8,9]
PER7	Seven-wire receptacle only (no controls)[8,9]
DMG	0-10V dimming driver (no controls)[10]
DCR	Dimmable and controllable via ROAM® (no controls)[11]
PIR	Motion sensor, 8-15' mounting height[12]
PIRH	Motion sensor, 15-30' mounting height[12]

BL30	Bi-level switched dimming, 30%[13,14]
BL50	Bi-level switched dimming, 50%[13,14]
PNMTDD3	Part night, dim till dawn[15]
PNMT5D3	Part night, dim 5 hrs[15]
PNMT6D3	Part night, dim 6 hrs[15]
PNMT7D3	Part night, dim 7 hrs[15]

Other options

Shipped installed

HS	House-side shield[16]
SF	Single fuse (120, 277, 347V)[17]
DF	Double fuse (208, 240, 480V)[17]
L90	Left rotated optics[1]
R90	Right rotated optics[1]
DDL	Diffused drop lens[16]

Finish *(required)*

DDBXD	Dark bronze
DBLXD	Black
DNAXD	Natural aluminum
DWHXD	White
DDBTXD	Textured dark bronze
DBLBXD	Textured black
DNATXD	Textured natural aluminum
DWHGXD	Textured white

Accessories

Ordered and shipped separately.

Controls & Shields

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V)[18]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V)[18]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V)[18]
SC U	Shorting cap[18]
DSX0HS 20C U	House-side shield for 20 LED unit[16]
DSX0HS 30C U	House-side shield for 30 LED unit[16]
DSX0HS 40C U	House-side shield for 40 LED unit[16]
DSX0DDL U	Diffused drop lens (polycarbonate)[16]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish)
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish)[7]

For more control options, visit DTL and ROAM online.

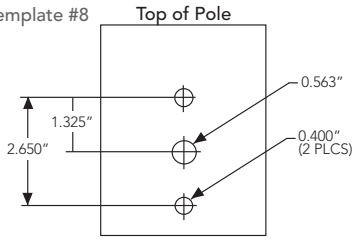
NOTES

1. 30 LEDs (30C option) and rotated options (L90 or R90) only available together.
2. 1000mA not available with AMBPC.
3. AMBPC only available with 530mA or 700mA.
4. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120V, 208V, 240V or 277V options only when ordering with fusing (SF, DF options).
5. Not available with single board, 530mA product (20C 530 or 30C 530). Not available with BL30, BL50 or PNMT options.
6. Available as a separate combination accessory: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
7. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
8. Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories.
9. If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Not available with DCR.
10. DMG option for 347V or 480V requires 1000mA.
11. Specifies a ROAM® enabled luminaire with 0-10V dimming capability; PER option required. Additional hardware and services required for ROAM® deployment; must be purchased separately. Call 1-800-442-6745 or email: sales@roamservices.net. N/A with PIR, PIRH, PER5, PER7, BL30, BL50 or PNMT options.
12. PIR specifies the SensorSwitch SBGR-10-ODP control; PIRH specifies the SensorSwitch SBGR-6-ODP control; see Motion Sensor Guide for details. Dimming driver standard. Not available with PER5 or PER7.
13. Requires an additional switched circuit.
14. Dimming driver standard. MVOLT only. Not available with 347V, 480V, DCR, PER5, PER7 or PNMT options.
15. Dimming driver standard. MVOLT only. Not available with 347V, 480V, DCR, PER5, PER7, BL30 or BL50.
16. Also available as a separate accessory; see Accessories information.
17. Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
18. Requires luminaire to be specified with PER option. Ordered and shipped as a separate line item from Acuity Brands Controls.

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Drilling

Template #8



DSX0 shares a unique drilling pattern with the AERIS™ family. Specify this drilling pattern when specifying poles, per the table below.

DM19AS	Single unit	**DM29AS**	2 at 90° *
DM28AS	2 at 180°	**DM39AS**	3 at 90° *
DM49AS	4 at 90° *	**DM32AS**	3 at 120° **

Example: SSA 20 4C **DM19AS** DDBXD

Visit Lithonia Lighting's POLES CENTRAL to see our wide selection of poles, accessories and educational tools.

*Round pole top must be 3.25" O.D. minimum.

**For round pole mounting (RPA) only.

Tenon Mounting Slipfitter **

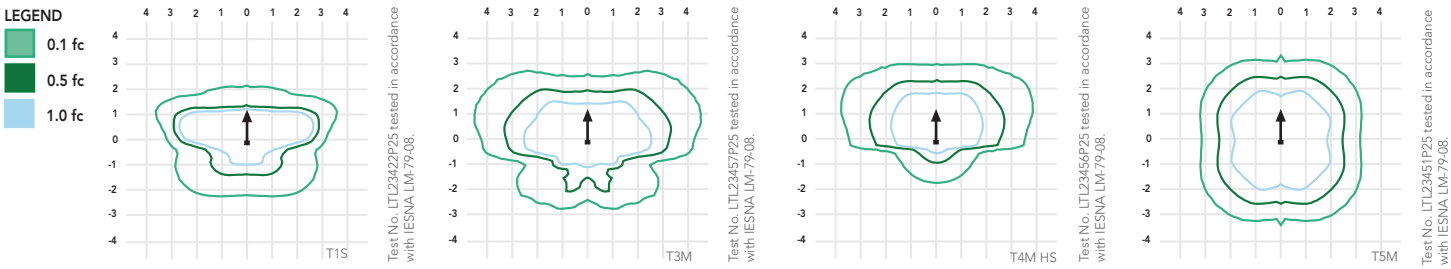
Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

TYPE T2/T2H

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	1.00
40°C	104°F	0.99

Electrical Load

			Current (A)					
Number of LEDs	Drive Current (mA)	System Watts	120	208	240	277	347	480
20C	530	35	0.34	0.22	0.21	0.20	--	--
	700	45	0.47	0.28	0.24	0.22	0.18	0.14
	1000	72	0.76	0.45	0.39	0.36	0.36	0.26
30C	530	52	0.51	0.31	0.28	0.25	--	--
	700	70	0.72	0.43	0.37	0.34	0.25	0.19
	1000	104	1.11	0.64	0.56	0.49	0.47	0.34
40C	530	68	0.71	0.41	0.36	0.33	0.25	0.19
	700	91	0.94	0.55	0.48	0.42	0.33	0.24
	1000	138	1.45	0.84	0.73	0.64	0.69	0.50

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	DSX0 LED 20C 1000			
	1	0.97	0.94	0.90
	DSX0 LED 40C 1000			
	1	0.94	0.90	0.84
	DSX0 LED 40C 700			
	1	0.99	0.98	0.96

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	530 mA	35 W	T1S	3,174	1	0	1	91	3,971	1	0	1	113	4,001	1	0	1	114	2,541	1	0	1	73
			T2S	3,234	1	0	1	92	4,045	1	0	1	116	4,075	1	0	1	116	2,589	1	0	1	74
			T2M	3,171	1	0	1	91	3,967	1	0	1	113	3,997	1	0	1	114	2,539	1	0	1	73
			T3S	3,195	1	0	1	91	3,997	1	0	1	114	4,027	1	0	1	115	2,558	1	0	1	73
			T3M	3,226	1	0	1	92	4,036	1	0	1	115	4,066	1	0	1	116	2,583	1	0	1	74
			T4M	3,210	1	0	1	92	4,015	1	0	1	115	4,045	1	0	1	116	2,570	1	0	1	73
			TFTM	3,173	1	0	1	91	3,969	1	0	2	113	3,999	1	0	2	114	2,540	1	0	1	73
			T5VS	3,310	2	0	0	95	4,140	2	0	0	118	4,172	2	0	0	119	2,650	1	0	0	76
			T5S	3,360	2	0	2	96	4,203	2	0	0	120	4,235	2	0	0	121	2,690	1	0	0	77
			T5M	3,320	2	0	1	95	4,153	3	0	1	119	4,184	3	0	1	120	2,658	2	0	0	76
			T5W	3,327	3	0	1	95	4,161	3	0	1	119	4,193	3	0	1	120	2,663	2	0	1	76
	700 mA	45 W	T1S	3,927	1	0	1	87	4,913	1	0	1	109	4,950	1	0	1	110	3,144	1	0	1	70
			T2S	4,000	1	0	1	89	5,004	1	0	1	111	5,042	1	0	1	112	3,203	1	0	1	71
			T2M	3,924	1	0	1	87	4,908	1	0	1	109	4,945	1	0	1	110	3,141	1	0	1	70
			T3S	3,953	1	0	1	88	4,945	1	0	1	110	4,982	1	0	1	111	3,165	1	0	1	70
			T3M	3,991	1	0	1	89	4,994	1	0	2	111	5,031	1	0	2	112	3,196	1	0	1	71
			T4M	3,971	1	0	1	88	4,967	1	0	2	110	5,005	1	0	2	111	3,179	1	0	1	71
			TFTM	3,925	1	0	2	87	4,910	1	0	2	109	4,947	1	0	2	110	3,143	1	0	1	70
			T5VS	4,095	2	0	0	91	5,122	2	0	0	114	5,161	2	0	0	115	3,278	2	0	0	73
			T5S	4,157	2	0	0	92	5,200	2	0	0	116	5,239	2	0	0	116	3,328	2	0	0	74
			T5M	4,107	3	0	1	91	5,138	3	0	1	114	5,177	3	0	1	115	3,288	2	0	1	73
			T5W	4,116	3	0	1	91	5,148	3	0	1	114	5,187	3	0	1	115	3,295	2	0	1	73
	1000 mA	72 W	T1S	5,387	1	0	1	75	6,739	2	0	2	94	6,790	2	0	2	94					
			T2S	5,488	1	0	1	76	6,865	2	0	2	95	6,917	2	0	2	96					
			T2M	5,382	1	0	2	75	6,733	2	0	2	94	6,784	2	0	2	94					
			T3S	5,423	1	0	1	75	6,784	2	0	2	94	6,835	2	0	2	95					
			T3M	5,475	1	0	2	76	6,850	2	0	2	95	6,901	2	0	2	96					
			T4M	5,447	1	0	2	76	6,814	2	0	2	95	6,866	2	0	2	95					
			TFTM	5,385	1	0	2	75	6,736	1	0	2	94	6,787	1	0	2	94					
			T5VS	5,617	2	0	0	78	7,027	3	0	0	98	7,080	3	0	0	98					
			T5S	5,702	2	0	0	79	7,133	2	0	0	99	7,187	2	0	0	100					
			T5M	5,634	3	0	1	78	7,048	3	0	1	98	7,101	3	0	1	99					
			T5W	5,646	3	0	1	78	7,063	3	0	2	98	7,116	3	0	2	99					
40C (40 LEDs)	530 mA	68 W	T1S	6,093	2	0	2	90	7,622	2	0	2	112	7,679	2	0	2	113	4,878	1	0	1	72
			T2S	6,207	2	0	2	91	7,764	2	0	2	114	7,823	2	0	2	115	4,969	1	0	1	73
			T2M	6,087	2	0	2	90	7,615	2	0	2	112	7,672	2	0	2	113	4,874	1	0	1	72
			T3S	6,133	1	0	2	90	7,672	2	0	2	113	7,730	2	0	2	114	4,910	1	0	1	72
			T3M	6,193	2	0	2	91	7,747	2	0	2	114	7,805	2	0	2	115	4,958	1	0	2	73
			T4M	6,161	1	0	2	91	7,707	2	0	2	113	7,765	2	0	2	114	4,932	1	0	2	73
			TFTM	6,090	1	0	2	90	7,618	2	0	2	112	7,676	2	0	2	113	4,876	1	0	2	72
			T5VS	6,353	2	0	0	93	7,947	3	0	0	117	8,007	3	0	0	118	5,086	2	0	0	75
			T5S	6,449	2	0	0	95	8,068	3	0	1	119	8,128	3	0	1	120	5,163	2	0	0	76
			T5M	6,372	3	0	1	94	7,971	3	0	2	117	8,031	3	0	2	118	5,102	3	0	1	75
			T5W	6,385	3	0	2	94	7,988	3	0	2	117	8,048	3	0	2	118	5,112	3	0	1	75
	700 mA	91 W	T1S	7,752	2	0	2	85	9,697	2	0	2	107	9,770	2	0	2	107	6,206	2	0	2	68
			T2S	7,897	2	0	2	87	9,878	2	0	2	109	9,953	2	0	2	109	6,322	2	0	2	69
			T2M	7,745	2	0	2	85	9,688	2	0	2	106	9,761	2	0	2	107	6,201	2	0	2	68
			T3S	7,803	2	0	2	86	9,761	2	0	2	107	9,834	2	0	2	108	6,247	1	0	2	69
			T3M	7,879	2	0	2	87	9,856	2	0	2	108	9,930	2	0	2	109	6,308	2	0	2	69
			T4M	7,838	2	0	2	86	9,805	2	0	2	108	9,879	2	0	2	109	6,275	1	0	2	69
			TFTM	7,748	2	0	2	85	9,693	2	0	3	107	9,765	2	0	3	107	6,203	1	0	2	68
			T5VS	8,083	3	0	0	89	10,111	3	0	1	111	10,187	3	0	1	112	6,569	2	0	0	72
			T5S	8,205	3	0	1	90	10,264	3	0	1	113	10,341	3	0	1	114	6,569	2	0	0	72
			T5M	8,107	3	0	2	89	10,142	3	0	2	111	10,218	3	0	2	112	6,491	3	0	1	71
			T5W	8,124	3	0	2	89	10,163	4	0	2	112	10,239	4	0	2	113	6,504	3	0	2	71
	1000 mA	138 W	T1S	10,435	2	0	2	76	13,054	3	0	3	95	13,152	3	0	3	95					
			T2S	10,630	2	0	2	77	13,297	3	0	3	96	13,398	3	0	3	97					
			T2M	10,426	2	0	2	76	13,042	3	0	3	95	13,140	3	0	3	95					
			T3S	10,503	2	0	2	76	13,139	2	0	2	95	13,238	2	0	2	96					
			T3M	10,606	2	0	2	77	13,267	3	0	3	96	13,367	3	0	3	97					
			T4M	10,551	2	0	2	76	13,199	3	0	3	96	13,298	3	0	3	96					
			TFTM	10,430	2	0	3	76	13,047	2	0	3	95	13,146	2	0	3	95					
			T5VS	10,881	3	0	1	79	13,611	3	0	1	99	13,714	4	0	1	99					
			T5S	11,045	3	0	1	80	13,817	3	0	1	100	13,921	3	0	1	101					
			T5M	10,914	4	0	2	79	13,652	4	0	2	99	13,755	4	0	2	100					
			T5W	10,936	4	0	2	79	13,680	4	0	2	99	13,783	4	0	2	100					

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Performance Data

TYPE T2/T2H

L90 and R90 Rotated Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30C (30 LEDs)	530 mA	52 W	T1S	4,797	2	0	2	92	6,001	2	0	2	115	6,046	2	0	2	116	3,841	2	0	2	74
			T2S	4,887	2	0	2	94	6,113	2	0	2	118	6,159	3	0	3	118	3,912	2	0	2	75
			T2M	4,793	2	0	2	92	5,996	3	0	3	115	6,041	3	0	3	116	3,837	2	0	2	74
			T3S	4,829	2	0	2	93	6,041	3	0	3	116	6,086	3	0	3	117	3,866	2	0	2	74
			T3M	4,876	3	0	3	94	6,099	3	0	3	117	6,145	3	0	3	118	3,904	2	0	2	75
			T4M	4,851	3	0	3	93	6,068	3	0	3	117	6,114	3	0	3	118	3,884	2	0	2	75
			TFTM	4,795	3	0	3	92	5,998	3	0	3	115	6,043	3	0	3	116	3,839	2	0	2	74
			T5VS	5,002	2	0	0	96	6,258	2	0	0	120	6,305	2	0	0	121	4,005	2	0	0	77
			T5S	5,078	2	0	0	98	6,352	2	0	0	122	6,400	2	0	0	123	4,065	2	0	0	78
			T5M	5,017	3	0	1	96	6,276	3	0	1	121	6,324	3	0	1	122	4,017	2	0	1	77
			T5W	5,028	3	0	1	97	6,289	3	0	2	121	6,337	3	0	2	122	4,025	3	0	1	77
	700 mA	70 W	T1S	5,975	2	0	2	85	7,474	3	0	3	107	7,530	3	0	3	108	4,783	2	0	2	68
			T2S	6,086	2	0	2	87	7,614	3	0	3	109	7,671	3	0	3	110	4,873	2	0	2	70
			T2M	5,969	3	0	3	85	7,467	3	0	3	107	7,524	3	0	3	107	4,779	2	0	2	68
			T3S	6,014	3	0	3	86	7,523	3	0	3	107	7,580	3	0	3	108	4,815	2	0	2	69
			T3M	6,072	3	0	3	87	7,596	3	0	3	109	7,654	3	0	3	109	4,862	3	0	3	69
			T4M	6,041	3	0	3	86	7,557	3	0	3	108	7,614	3	0	3	109	4,837	3	0	3	69
			TFTM	5,972	3	0	3	85	7,471	3	0	3	107	7,527	3	0	3	108	4,781	3	0	3	68
			T5VS	6,230	2	0	0	89	7,793	3	0	0	111	7,852	3	0	0	112	4,988	2	0	0	71
			T5S	6,324	2	0	0	90	7,911	3	0	1	113	7,971	3	0	1	114	5,063	2	0	0	72
			T5M	6,249	3	0	1	89	7,817	3	0	2	112	7,876	3	0	2	113	5,003	3	0	1	71
			T5W	6,262	3	0	2	89	7,833	3	0	2	112	7,892	3	0	2	113	5,013	3	0	1	72
	1000 mA	104 W	T1S	7,956	3	0	3	76	9,952	3	0	3	96	10,027	3	0	3	96					
			T2S	8,104	3	0	3	78	10,138	3	0	3	97	10,214	3	0	3	98					
			T2M	7,949	3	0	3	76	9,943	3	0	3	96	10,018	3	0	3	96					
			T3S	8,008	3	0	3	77	10,018	3	0	3	96	10,093	3	0	3	97					
			T3M	8,086	3	0	3	78	10,115	4	0	4	97	10,191	4	0	4	98					
			T4M	8,044	3	0	3	77	10,063	3	0	3	97	10,139	3	0	3	97					
			TFTM	7,952	3	0	3	76	9,948	3	0	3	96	10,022	4	0	4	96					
			T5VS	8,296	3	0	0	80	10,377	3	0	1	100	10,455	3	0	1	101					
			T5S	8,421	3	0	1	81	10,534	3	0	1	101	10,613	3	0	1	102					
			T5M	8,321	3	0	2	80	10,409	4	0	2	100	10,487	4	0	2	101					
			T5W	8,338	4	0	2	80	10,430	4	0	2	100	10,509	4	0	2	101					

FEATURES & SPECIFICATIONS

INTENDED USE
The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.8 ft^2) for optimized pole wind loading.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 4000 K (70 minimum CRI) or optional 3000 K (80 minimum CRI) or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L96/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV or 6kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern. Optional terminal block, tool-less entry, and NEMA photocontrol receptacle are also available.

LISTINGS
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY
Five-year limited warranty. Full warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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D-Series Size 0
LED Area Luminaire

Catalog Number

Notes

Type

TYPE T3

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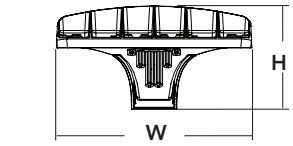
Introduction

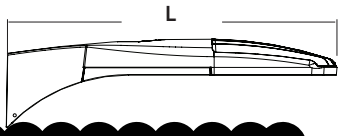
The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 65% and expected service life of over 100,000 hours.

Specifications

EPA:	0.8 ft² (.07 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)





MAIN PARKING LOT LIGHTING

Ordering Information

EXAMPLE: DSX0 LED 40C 1000 40K T3M MVOLT SPA DDBXD

DSX0 LED

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** 20C 20 LEDs (one engine) 40C 40 LEDs (two engines) **Rotated optics**[1] 30C 30 LEDs (one engine)	530 530 mA 700 700 mA 1000 1000 mA (1 A)[2]	30K 3000 K (80 CRI min.) 40K 4000 K (70 CRI min.) 50K 5000 K (70 CRI) AMBPC Amber phosphor converted[3]	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide	MVOLT[4] 120[4] 208[4] 240[4] 277[4] 347[5] 480[5]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor[6] RPUMBA Round pole universal mounting adaptor[6] **Shipped separately**[7] KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)

Control options

Shipped installed

PER	NEMA twist-lock receptacle only (no controls)[8]
PER5	Five-wire receptacle only (no controls)[8,9]
PER7	Seven-wire receptacle only (no controls)[8,9]
DMG	0-10V dimming driver (no controls)[10]
DCR	Dimmable and controllable via ROAM® (no controls)[11]
PIR	Motion sensor, 8-15' mounting height[12]
PIRH	Motion sensor, 15-30' mounting height[12]

BL30	Bi-level switched dimming, 30%[13,14]
BL50	Bi-level switched dimming, 50%[13,14]
PNMTDD3	Part night, dim till dawn[15]
PNMT5D3	Part night, dim 5 hrs[15]
PNMT6D3	Part night, dim 6 hrs[15]
PNMT7D3	Part night, dim 7 hrs[15]

Other options

Shipped installed

HS	House-side shield[16]
SF	Single fuse (120, 277, 347V)[17]
DF	Double fuse (208, 240, 480V)[17]
L90	Left rotated optics[1]
R90	Right rotated optics[1]
DDL	Diffused drop lens[16]

Finish *(required)*

DDBXD	Dark bronze
DBLXD	Black
DNAXD	Natural aluminum
DWHXD	White
DDBTXD	Textured dark bronze
DBLBXD	Textured black
DNATXD	Textured natural aluminum
DWHGXD	Textured white

Accessories

Ordered and shipped separately.

Controls & Shields

DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V)[18]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V)[18]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V)[18]
SC U	Shorting cap[18]
DSX0HS 20C U	House-side shield for 20 LED unit[16]
DSX0HS 30C U	House-side shield for 30 LED unit[16]
DSX0HS 40C U	House-side shield for 40 LED unit[16]
DSX0DDL U	Diffused drop lens (polycarbonate)[16]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish)
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish)[7]

For more control options, visit DTL and ROAM online.

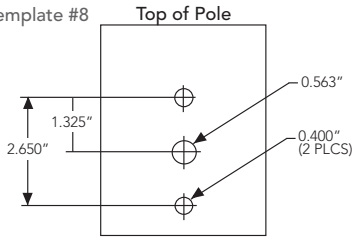
NOTES

1. 30 LEDs (30C option) and rotated options (L90 or R90) only available together.
2. 1000mA not available with AMBPC.
3. AMBPC only available with 530mA or 700mA.
4. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120V, 208V, 240V or 277V options only when ordering with fusing (SF, DF options).
5. Not available with single board, 530mA product (20C 530 or 30C 530). Not available with BL30, BL50 or PNMT options.
6. Available as a separate combination accessory: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
7. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
8. Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories.
9. If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Not available with DCR.
10. DMG option for 347V or 480V requires 1000mA.
11. Specifies a ROAM® enabled luminaire with 0-10V dimming capability; PER option required. Additional hardware and services required for ROAM® deployment; must be purchased separately. Call 1-800-442-6745 or email: sales@roamservices.net. N/A with PIR, PIRH, PER5, PER7, BL30, BL50 or PNMT options.
12. PIR specifies the SensorSwitch SBGR-10-ODP control; PIRH specifies the SensorSwitch SBGR-6-ODP control; see Motion Sensor Guide for details. Dimming driver standard. Not available with PER5 or PER7.
13. Requires an additional switched circuit.
14. Dimming driver standard. MVOLT only. Not available with 347V, 480V, DCR, PER5, PER7 or PNMT options.
15. Dimming driver standard. MVOLT only. Not available with 347V, 480V, DCR, PER5, PER7, BL30 or BL50.
16. Also available as a separate accessory; see Accessories information.
17. Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
18. Requires luminaire to be specified with PER option. Ordered and shipped as a separate line item from Acuity Brands Controls.

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Drilling

Template #8



DSX0 shares a unique drilling pattern with the AERIS™ family. Specify this drilling pattern when specifying poles, per the table below.

DM19AS	Single unit	**DM29AS**	2 at 90° *
DM28AS	2 at 180°	**DM39AS**	3 at 90° *
DM49AS	4 at 90° *	**DM32AS**	3 at 120° **

Example: SSA 20 4C **DM19AS** DDBXD

Visit Lithonia Lighting's POLES CENTRAL to see our wide selection of poles, accessories and educational tools.

*Round pole top must be 3.25" O.D. minimum.

**For round pole mounting (RPA) only.

Tenon Mounting Slipfitter **

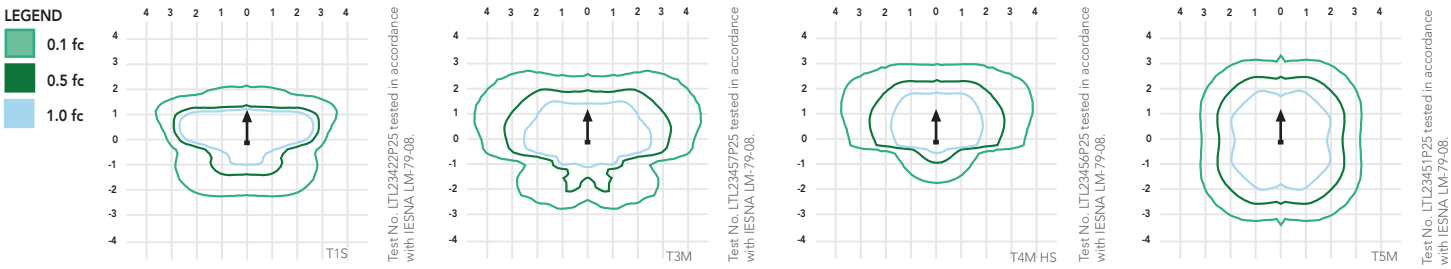
Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

TYPE T3

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area homepage.

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	1.00
40°C	104°F	0.99

Electrical Load

			Current (A)					
Number of LEDs	Drive Current (mA)	System Watts	120	208	240	277	347	480
20C	530	35	0.34	0.22	0.21	0.20	--	--
	700	45	0.47	0.28	0.24	0.22	0.18	0.14
	1000	72	0.76	0.45	0.39	0.36	0.36	0.26
30C	530	52	0.51	0.31	0.28	0.25	--	--
	700	70	0.72	0.43	0.37	0.34	0.25	0.19
	1000	104	1.11	0.64	0.56	0.49	0.47	0.34
40C	530	68	0.71	0.41	0.36	0.33	0.25	0.19
	700	91	0.94	0.55	0.48	0.42	0.33	0.24
	1000	138	1.45	0.84	0.73	0.64	0.69	0.50

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	DSX0 LED 20C 1000			
	1	0.97	0.94	0.90
	DSX0 LED 40C 1000			
	1	0.94	0.90	0.84
	DSX0 LED 40C 700			
	1	0.99	0.98	0.96

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Performance Data

TYPE T3

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	530 mA	35 W	T1S	3,174	1	0	1	91	3,971	1	0	1	113	4,001	1	0	1	114	2,541	1	0	1	73
			T2S	3,234	1	0	1	92	4,045	1	0	1	116	4,075	1	0	1	116	2,589	1	0	1	74
			T2M	3,171	1	0	1	91	3,967	1	0	1	113	3,997	1	0	1	114	2,539	1	0	1	73
			T3S	3,195	1	0	1	91	3,997	1	0	1	114	4,027	1	0	1	115	2,558	1	0	1	73
			T3M	3,226	1	0	1	92	4,036	1	0	1	115	4,066	1	0	1	116	2,583	1	0	1	74
			T4M	3,210	1	0	1	92	4,015	1	0	1	115	4,045	1	0	1	116	2,570	1	0	1	73
			TFTM	3,173	1	0	1	91	3,969	1	0	2	113	3,999	1	0	2	114	2,540	1	0	1	73
			T5VS	3,310	2	0	0	95	4,140	2	0	0	118	4,172	2	0	0	119	2,650	1	0	0	76
			T5S	3,360	2	0	2	96	4,203	2	0	0	120	4,235	2	0	0	121	2,690	1	0	0	77
			T5M	3,320	2	0	1	95	4,153	3	0	1	119	4,184	3	0	1	120	2,658	2	0	0	76
			T5W	3,327	3	0	1	95	4,161	3	0	1	119	4,193	3	0	1	120	2,663	2	0	1	76
	700 mA	45 W	T1S	3,927	1	0	1	87	4,913	1	0	1	109	4,950	1	0	1	110	3,144	1	0	1	70
			T2S	4,000	1	0	1	89	5,004	1	0	1	111	5,042	1	0	1	112	3,203	1	0	1	71
			T2M	3,924	1	0	1	87	4,908	1	0	1	109	4,945	1	0	1	110	3,141	1	0	1	70
			T3S	3,953	1	0	1	88	4,945	1	0	1	110	4,982	1	0	1	111	3,165	1	0	1	70
			T3M	3,991	1	0	1	89	4,994	1	0	2	111	5,031	1	0	2	112	3,196	1	0	1	71
			T4M	3,971	1	0	1	88	4,967	1	0	2	110	5,005	1	0	2	111	3,179	1	0	1	71
			TFTM	3,925	1	0	2	87	4,910	1	0	2	109	4,947	1	0	2	110	3,143	1	0	1	70
			T5VS	4,095	2	0	0	91	5,122	2	0	0	114	5,161	2	0	0	115	3,278	2	0	0	73
			T5S	4,157	2	0	0	92	5,200	2	0	0	116	5,239	2	0	0	116	3,328	2	0	0	74
			T5M	4,107	3	0	1	91	5,138	3	0	1	114	5,177	3	0	1	115	3,288	2	0	1	73
			T5W	4,116	3	0	1	91	5,148	3	0	1	114	5,187	3	0	1	115	3,295	2	0	1	73
	1000 mA	72 W	T1S	5,387	1	0	1	75	6,739	2	0	2	94	6,790	2	0	2	94					
			T2S	5,488	1	0	1	76	6,865	2	0	2	95	6,917	2	0	2	96					
			T2M	5,382	1	0	2	75	6,733	2	0	2	94	6,784	2	0	2	94					
			T3S	5,423	1	0	1	75	6,784	2	0	2	94	6,835	2	0	2	95					
			T3M	5,475	1	0	2	76	6,850	2	0	2	95	6,901	2	0	2	96					
			T4M	5,447	1	0	2	76	6,814	2	0	2	95	6,866	2	0	2	95					
			TFTM	5,385	1	0	2	75	6,736	1	0	2	94	6,787	1	0	2	94					
			T5VS	5,617	2	0	0	78	7,027	3	0	0	98	7,080	3	0	0	98					
			T5S	5,702	2	0	0	79	7,133	2	0	0	99	7,187	2	0	0	100					
			T5M	5,634	3	0	1	78	7,048	3	0	1	98	7,101	3	0	1	99					
			T5W	5,646	3	0	1	78	7,063	3	0	2	98	7,116	3	0	2	99					
40C (40 LEDs)	530 mA	68 W	T1S	6,093	2	0	2	90	7,622	2	0	2	112	7,679	2	0	2	113	4,878	1	0	1	72
			T2S	6,207	2	0	2	91	7,764	2	0	2	114	7,823	2	0	2	115	4,969	1	0	1	73
			T2M	6,087	2	0	2	90	7,615	2	0	2	112	7,672	2	0	2	113	4,874	1	0	1	72
			T3S	6,133	1	0	2	90	7,672	2	0	2	113	7,730	2	0	2	114	4,910	1	0	1	72
			T3M	6,193	2	0	2	91	7,747	2	0	2	114	7,805	2	0	2	115	4,958	1	0	2	73
			T4M	6,161	1	0	2	91	7,707	2	0	2	113	7,765	2	0	2	114	4,932	1	0	2	73
			TFTM	6,090	1	0	2	90	7,618	2	0	2	112	7,676	2	0	2	113	4,876	1	0	2	72
			T5VS	6,353	2	0	0	93	7,947	3	0	0	117	8,007	3	0	0	118	5,086	2	0	0	75
			T5S	6,449	2	0	0	95	8,068	3	0	1	119	8,128	3	0	1	120	5,163	2	0	0	76
			T5M	6,372	3	0	1	94	7,971	3	0	2	117	8,031	3	0	2	118	5,102	3	0	1	75
			T5W	6,385	3	0	2	94	7,988	3	0	2	117	8,048	3	0	2	118	5,112	3	0	1	75
	700 mA	91 W	T1S	7,752	2	0	2	85	9,697	2	0	2	107	9,770	2	0	2	107	6,206	2	0	2	68
			T2S	7,897	2	0	2	87	9,878	2	0	2	109	9,953	2	0	2	109	6,322	2	0	2	69
			T2M	7,745	2	0	2	85	9,688	2	0	2	106	9,761	2	0	2	107	6,201	2	0	2	68
			T3S	7,803	2	0	2	86	9,761	2	0	2	107	9,834	2	0	2	108	6,247	1	0	2	69
			T3M	7,879	2	0	2	87	9,856	2	0	2	108	9,930	2	0	2	109	6,308	2	0	2	69
			T4M	7,838	2	0	2	86	9,805	2	0	2	108	9,879	2	0	2	109	6,275	1	0	2	69
			TFTM	7,748	2	0	2	85	9,693	2	0	3	107	9,765	2	0	3	107	6,203	1	0	2	68
			T5VS	8,083	3	0	0	89	10,111	3	0	1	111	10,187	3	0	1	112	6,569	2	0	0	72
			T5S	8,205	3	0	1	90	10,264	3	0	1	113	10,341	3	0	1	114	6,569	2	0	0	72
			T5M	8,107	3	0	2	89	10,142	3	0	2	111	10,218	3	0	2	112	6,491	3	0	1	71
			T5W	8,124	3	0	2	89	10,163	4	0	2	112	10,239	4	0	2	113	6,504	3	0	2	71
	1000 mA	138 W	T1S	10,435	2	0	2	76	13,054	3	0	3	95	13,152	3	0	3	95					
			T2S	10,630	2	0	2	77	13,297	3	0	3	96	13,398	3	0	3	97					
			T2M	10,426	2	0	2	76	13,042	3	0	3	95	13,140	3	0	3	95					
			T3S	10,503	2	0	2	76	13,139	2	0	2	95	13,238	2	0	2	96					
			T3M	10,606	2	0	2	77	13,267	3	0	3	96	13,367	3	0	3	97					
			T4M	10,551	2	0	2	76	13,199	3	0	3	96	13,298	3	0	3	96					
			TFTM	10,430	2	0	3	76	13,047	2	0	3	95	13,146	2	0	3	95					
			T5VS	10,881	3	0	1	79	13,611	3	0	1	99	13,714	4	0	1	99					
			T5S	11,045	3	0	1	80	13,817	3	0	1	100	13,921	3	0	1	101					
			T5M	10,914	4	0	2	79	13,652	4	0	2	99	13,755	4	0	2	100					
			T5W	10,936	4	0	2	79	13,680	4	0	2	99	13,783	4	0	2	100					

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Performance Data

TYPE T3

L90 and R90 Rotated Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30C (30 LEDs)	530 mA	52 W	T1S	4,797	2	0	2	92	6,001	2	0	2	115	6,046	2	0	2	116	3,841	2	0	2	74
			T2S	4,887	2	0	2	94	6,113	2	0	2	118	6,159	3	0	3	118	3,912	2	0	2	75
			T2M	4,793	2	0	2	92	5,996	3	0	3	115	6,041	3	0	3	116	3,837	2	0	2	74
			T3S	4,829	2	0	2	93	6,041	3	0	3	116	6,086	3	0	3	117	3,866	2	0	2	74
			T3M	4,876	3	0	3	94	6,099	3	0	3	117	6,145	3	0	3	118	3,904	2	0	2	75
			T4M	4,851	3	0	3	93	6,068	3	0	3	117	6,114	3	0	3	118	3,884	2	0	2	75
			TFTM	4,795	3	0	3	92	5,998	3	0	3	115	6,043	3	0	3	116	3,839	2	0	2	74
			T5VS	5,002	2	0	0	96	6,258	2	0	0	120	6,305	2	0	0	121	4,005	2	0	0	77
			T5S	5,078	2	0	0	98	6,352	2	0	0	122	6,400	2	0	0	123	4,065	2	0	0	78
			T5M	5,017	3	0	1	96	6,276	3	0	1	121	6,324	3	0	1	122	4,017	2	0	1	77
			T5W	5,028	3	0	1	97	6,289	3	0	2	121	6,337	3	0	2	122	4,025	3	0	1	77
	700 mA	70 W	T1S	5,975	2	0	2	85	7,474	3	0	3	107	7,530	3	0	3	108	4,783	2	0	2	68
			T2S	6,086	2	0	2	87	7,614	3	0	3	109	7,671	3	0	3	110	4,873	2	0	2	70
			T2M	5,969	3	0	3	85	7,467	3	0	3	107	7,524	3	0	3	107	4,779	2	0	2	68
			T3S	6,014	3	0	3	86	7,523	3	0	3	107	7,580	3	0	3	108	4,815	2	0	2	69
			T3M	6,072	3	0	3	87	7,596	3	0	3	109	7,654	3	0	3	109	4,862	3	0	3	69
			T4M	6,041	3	0	3	86	7,557	3	0	3	108	7,614	3	0	3	109	4,837	3	0	3	69
			TFTM	5,972	3	0	3	85	7,471	3	0	3	107	7,527	3	0	3	108	4,781	3	0	3	68
			T5VS	6,230	2	0	0	89	7,793	3	0	0	111	7,852	3	0	0	112	4,988	2	0	0	71
			T5S	6,324	2	0	0	90	7,911	3	0	1	113	7,971	3	0	1	114	5,063	2	0	0	72
			T5M	6,249	3	0	1	89	7,817	3	0	2	112	7,876	3	0	2	113	5,003	3	0	1	71
			T5W	6,262	3	0	2	89	7,833	3	0	2	112	7,892	3	0	2	113	5,013	3	0	1	72
	1000 mA	104 W	T1S	7,956	3	0	3	76	9,952	3	0	3	96	10,027	3	0	3	96					
			T2S	8,104	3	0	3	78	10,138	3	0	3	97	10,214	3	0	3	98					
			T2M	7,949	3	0	3	76	9,943	3	0	3	96	10,018	3	0	3	96					
			T3S	8,008	3	0	3	77	10,018	3	0	3	96	10,093	3	0	3	97					
			T3M	8,086	3	0	3	78	10,115	4	0	4	97	10,191	4	0	4	98					
			T4M	8,044	3	0	3	77	10,063	3	0	3	97	10,139	3	0	3	97					
			TFTM	7,952	3	0	3	76	9,948	3	0	3	96	10,022	4	0	4	96					
			T5VS	8,296	3	0	0	80	10,377	3	0	1	100	10,455	3	0	1	101					
			T5S	8,421	3	0	1	81	10,534	3	0	1	101	10,613	3	0	1	102					
			T5M	8,321	3	0	2	80	10,409	4	0	2	100	10,487	4	0	2	101					
			T5W	8,338	4	0	2	80	10,430	4	0	2	100	10,509	4	0	2	101					

FEATURES & SPECIFICATIONS

INTENDED USE
The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.8 ft^2) for optimized pole wind loading.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 4000 K (70 minimum CRI) or optional 3000 K (80 minimum CRI) or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L96/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV or 6kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern. Optional terminal block, tool-less entry, and NEMA photocontrol receptacle are also available.

LISTINGS
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY
Five-year limited warranty. Full warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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LITHONIA LIGHTING

Catalog Number

Notes

TYPE T POLE

Anchor Base Poles

SSS

SQUARE STRAIGHT STEEL



T1/T2 - 18'
T3 - 12'

FEATURES & SPECIFICATIONS

CONSTRUCTION

Weldable-grade, hot-rolled, commercial-quality carbon steel tubing with a minimum yield of 55,000 psi (11-gauge), 50,000 psi (7-gauge). Uniform wall thickness of .125" or .188". Shafts are one-piece with a longitudinal electric resistance weld. Uniformly square in cross-section with flat sides, small corner radii and excellent torsion. Available shaft widths are 4", 5" and 6".

Anchor base is fabricated from hot-rolled carbon steel plate that meets or exceeds a minimum yield strength of 36,000 psi. The anchor base is provided with slotted holes. Base cover is finished to match pole.

A handhole having nominal dimensions of 3" x 5" for all shafts. Included is a cover with attachment screws.

Top cap provided with all drill-mount poles.

Fasteners are high-strength galvanized zinc-plated or stainless steel.

FINISH — Dark bronze (DDB) polyester powder standard. Other architectural colors available.

GROUNDING — A nut holder located immediately inside the handhole rim is provided with a 1/2" – 13 UNC ground bolt and nut.

ANCHOR BOLTS — Top protion of anchor bolt is galvanized per ASTM A-153. Made of steel rod having a minimum yield strength of 55,000 psi.

ORDERING INFORMATION

Example: **SSS 20 5C DM19 DDB**

Choose the boldface catalog nomenclature that best suits your needs and write it in the appropriate blank.

SSS

Shaft type

SSS

Nominal shaft length

10 – 39 feet
(See back page.)

Nominal shaft base size/ wall thickness

(See back page.)

Mounting[1]

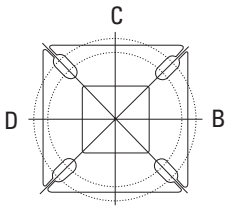
	Tenon Mounting
PT	Open top
T20	2-3/8" O.D. (2" NPS)
T25	2-7/8" O.D. (2-1/2" NPS)
T30[2]	3-1/2" O.D. (3" NPS)
T35[2]	4" O.D. (3-1/2" NPS)
	Drill Mounting[3]
DM19	1 at 90°
DM28	2 at 180°
DM28PL	2 at 180° with one side plugged
DM29	2 at 90°
DM39	3 at 90°
DM49	4 at 90°
	Aeris Drill Mounting[3]
DM19AS	1 at 90°
DM28AS	2 at 180°
DM29AS	2 at 90°
DM39AS	3 at 90°
DM49AS	4 at 90°

Options

	Shipped Installed
L/AB	Less Anchor Bolts
VD	Vibration Damper
TP	Tamper Proof
Hxx[4,5]	Horizontal Arm Bracket (1 fixture)
FDLxx[4]	Festoon Outlet less electrical
FGLxx[4]	Festoon GFI Outlet less electrical
12CPxx[4]	1/2" Coupling
34CPxx[4]	3/4" Coupling
1CPxx[4]	1" Coupling
12NPxx[4]	1/2" Threaded Nipple
34NPxx[4]	3/4" Threaded Nipple
1NPxx[4]	1" Threaded Nipple
HHxx[4,6]	Extra Handhole

	Architectural Colors (powder finish)[7]
	Standard Colors
DDB	Dark bronze
DWH	White
DBL	Black
	Classic Colors
DMB	Medium bronze
DNA	Natural aluminum
DSS	Sandstone
DGC	Charcoal gray
DTG	Tennis green
DBR	Bright red
DSB	Steel blue
GALV	Galvanized finish

HANDHOLE ORIENTATION



Handhole

NOTES:

1 When ordering tenon mounting and drill mounting for the same pole, follow this example: DM28/T20. The combination requires an extra handhole.

2 3-1/2" and 4" tenons available on 5" and 6" shafts only.

3 The drilling template to be used for a particular luminaire depends on the luminaire that is used. Refer to the Technical Data Section of the Outdoor Binder for Drilling Templates.

4 Specify location and orientation when ordering option.
For 1st "x": Specify the height in feet above base of pole.
Example: 5ft = 5 and 20ft = 20
For 2nd "x": Specify orientation from handhole (A,B,C,D)
Refer to the Handhole Orientation diagram on this page.

5 Horizontal arm is 18" x 2-3/8" O.D. tenon standard.

6 Combination of tenon-top and drill mount requires extra handhole.

7 Additional colors available; see Architectural Colors brochure, form no. 794.3.

IMPORTANT INSTALLATION NOTES:

- **Do not** erect poles without having fixtures installed.
- Factory-supplied templates must be used when setting anchor bolts. Lithonia will not accept claim for incorrect anchorage placement due to failure to use factory template.
- If poles are stored outside, all protective wrapping must be removed immediately to prevent finish damage.
- Lithonia is not responsible for the foundation design.
- Installation requires grout to be packed under base to ensure full contact with foundation.

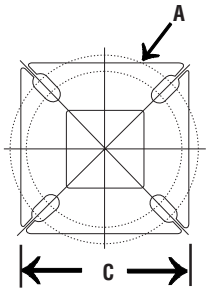
SSS Square Straight Steel Poles

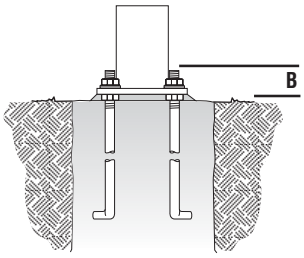
TYPE T POLE

T1/T2 - 18'
T3 - 12'

TECHNICAL INFORMATION

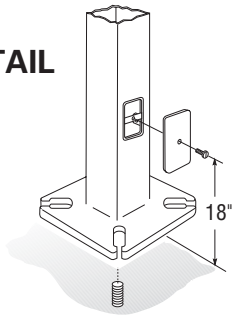
					EPA (ft^2) with 1.3 gust								
Catalog Number	Nominal shaft length (feet)	Pole Shaft Size(in x in x ft)	Wall Thickness (inches)	Gauge	80 mph	Max. weight	90 mph	Max. weight	100 mph	Max. weight	Bolt Circle (inches)	Bolt Size (in. x in. x in.)	Approximate ship weight (pounds)
SSS 10 4C	10	4.0 x 10.0	0.125	11	30.6	765	23.8	595	18.9	473	8--9	3/4 x 18 x 3	75
SSS 12 4C	12	4.0 x 12.0	0.125	11	24.4	610	18.8	470	14.8	370	8--9	3/4 x 18 x 3	90
SSS 14 4C	14	4.0 x 14.0	0.125	11	19.9	498	15.1	378	11.7	293	8--9	3/4 x 18 x 3	100
SSS 16 4C	16	4.0 x 16.0	0.125	11	15.9	398	11.8	295	8.9	223	8--9	3/4 x 18 x 3	115
SSS 18 4C	18	4.0 x 18.0	0.125	11	12.6	315	9.2	230	6.7	168	8--9	3/4 x 18 x 3	125
SSS 20 4C	20	4.0 x 20.0	0.125	11	9.6	240	6.7	167	4.5	150	8--9	3/4 x 18 x 3	140
SSS 20 4G	20	4.0 x 20.0	0.188	7	16.5	415	12.25	310	9.3	240	8--9	3/4 x 30 x 3	198
SSS 20 5C	20	5.0 x 20.0	0.125	11	17.7	443	12.7	343	9.4	235	10--12	1 x 36 x 4	185
SSS 20 5G	20	5.0 x 20.0	0.188	7	28.1	703	21.4	535	16.2	405	10--12	1 x 36 x 4	265
SSS 25 4C	25	4.0 x 25.0	0.125	11	4.8	150	2.6	100	1.0	50	8--9	3/4 x 18 x 3	170
SSS 25 4G	25	4.0 x 25.0	0.188	7	10.8	270	7.7	188	5.4	135	8--9	3/4 x 30 x 3	245
SSS 25 5C	25	5.0 x 25.0	0.125	11	9.8	245	6.3	157	3.7	150	10--12	1 x 36 x 4	225
SSS 25 5G	25	5.0 x 25.0	0.188	7	18.0	350	12.6	350	9.0	250	10--12	1 x 36 x 4	320
SSS 30 4G	30	4.0 x 30.0	0.188	7	6.4	160	4.0	100	2.3	58	8--9	3/4 x 30 x 3	295
SSS 30 5C	30	5.0 x 30.0	0.125	11	4.7	150	2.0	50	--	--	10--12	1 x 36 x 4	265
SSS 30 5G	30	5.0 x 30.0	0.188	7	10.7	267	6.7	167	3.9	100	10--12	1 x 36 x 4	380
SSS 30 6G	30	6.0 x 30.0	0.188	7	15.7	392	10.2	257	6.4	160	11--13	1 x 36 x 4	520
SSS 35 5G	35	5.0 x 35.0	0.188	7	5.9	150	2.5	100	--	--	10--12	1 x 36 x 4	440
SSS 35 6G	35	6.0 x 35.0	0.188	7	9.5	237	5.0	150	1.8	50	11--13	1 x 36 x 4	540
SSS 39 6G	39	6.0 x 39.0	0.188	7	5.1	128	1.3	33	--	--	11--13	1 x 36 x 4	605





Shaft Base Size	Bolt Circle **A**	Bolt Projection **B**	Base Square **C**	Anchor Bolt Description	Warehouse Anchor Bolt Description	Template Number
4"C	8-1/2"	2-3/4"–4"	8"	ABSSS-4C	AB18-0	PJ50004
4"G	8-1/2"	2-3/4"–4"	8"	ABSSS-4G	AB30-0	PJ50004
5"	10"–12"	3-3/8"–4"	11"	ABSSS-5	AB36-0	PJ50010
6"	11"–13"	3-3/8"–4"	12-1/2"	ABSSS-6	AB36-0	PJ50011

BASE DETAIL



IMPORTANT:

- These specifications are intended for general purposes only. Lithonia reserves the right to change material or design, without prior notice, in a continuing effort to upgrade its products.

LITHONIA LIGHTING
An AcuityBrands Company

Lithonia Lighting
Acuity Lighting Group, Inc.
Outdoor Lighting
One Lithonia Way, Conyers, GA 30012
Phone: 770-922-9000 Fax: 770-918-1209
In Canada: 1100 50th Ave., Lachine, Quebec H8T 2V3
www.lithonia.com

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VISTA PROFESSIONAL OUTDOOR LIGHTING

SPECIFICATION SHEET

SIDEWALK BOLLARD

Type: TYPE W

Model: _____

Project: _____

MODEL: 1447 - *120V Series:* Bollards & Beacons

FIXTURE SPECIFICATIONS:

HOUSING:
Die-cast, copper-free aluminum.

POST:
3" diameter, heavy-gauge, extruded aluminum (1/8" wall thickness).

FINISH:
Polyester powder-coat finish available in Black, Verde, Architectural Brick, Architectural Bronze, Light Bronze, Dark Bronze, Granite, Pewter, Terra-cotta, Rust, Hunter Green, Mocha, Weathered Bronze, Weathered Iron, and White.

SOCKET/LAMP HOLDER:
Compact fluorescent thermoplastic socket.

BALLAST:
High-power factor magnetic ballast rated for ±32°F starting, 120-volt standard.

LENS:
Clear, frosted or prismatic threaded and gasketed, tempered glass vapor globe.

LAMP TYPE:
PL- Compact Fluorescent. 22W Maximum. Ballast is integrated into fixture. Please specify ballast type from the fixture ordering information chart. Lamp not included with fixture, order separately.

MOUNTING:
Direct-burial post. (Post extended 12" for in-ground or concrete mounting.)

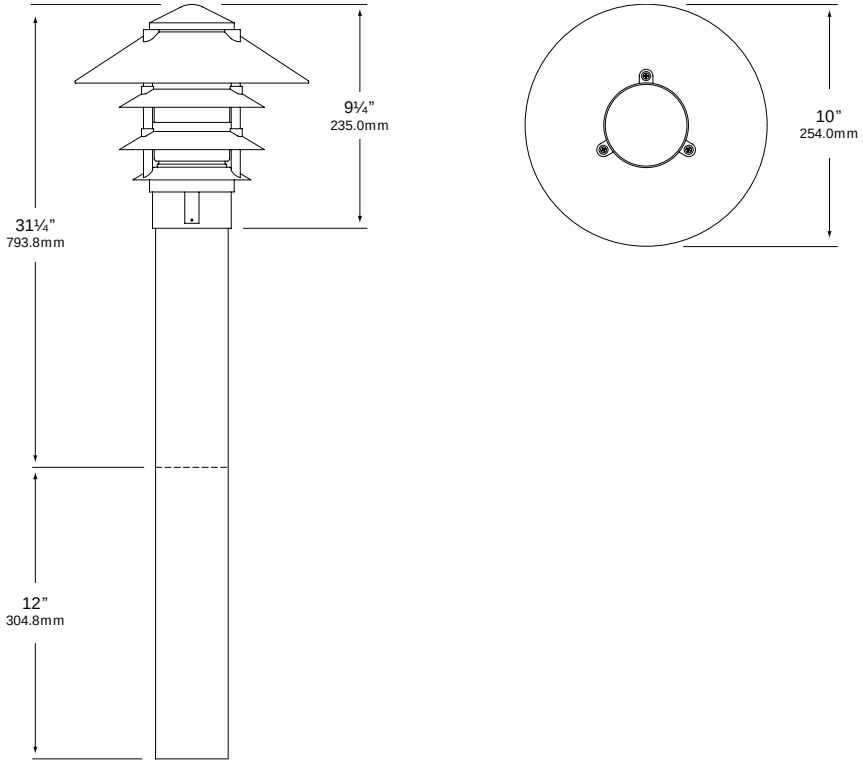
FASTENERS:
All fasteners are stainless steel.

WIRING:
Prewired with 200°C-rated wire along with a grounded lead.

CERTIFICATION:
UL Listed to U.S. and Canadian safety standards for line voltage landscape luminaires (UL 1598). The maximum wattages allowed by Underwriters Laboratories (UL) for the U.S. and Canadian markets may vary. Maximum wattages specified are Underwriters Laboratories U.S. standard. Please contact Vista for any questions about the maximum wattages allowed by UL Canadian standards.

All Vista luminaires are **MADE IN THE U.S.A.**

DIMENSIONS:



c UL us LISTED

Vista Professional Outdoor Lighting reserves the right to modify the design and/or construction of the fixture shown without further notification.

1625 Surveyor Avenue • Simi Valley, CA 93063 • (805) 527-0987 • (800) 766-VISTA (8478)
FAX: (888) 670-VISTA (8478) • email@vistapro.com • www.vistapro.com

VISTA PROFESSIONAL OUTDOOR LIGHTING

TYPE W

SPECIFICATION SHEET

MODEL: 1447 - *120V Series:* Bollards & Beacons

FIXTURE ORDERING INFORMATION

TO ORDER FIXTURE: Select appropriate choice from each column as in the following example

EXAMPLE: 1447-B-CR-13-120

MODEL	FINISH	LENS	INTEGRATED FLUORESCENT BALLAST	
			WATTAGE	VOLTAGE
1447	**B** - Black **G** - Verde **BR** - Architectural Brick **Z** - Architectural Bronze **LZ** - Light Bronze **DZ** - Dark Bronze **GT** - Granite **P** - Pewter **TC** - Terra-cotta **R** - Rust **HG** - Hunter Green **M** - Mocha **WB** - Weathered Bronze **WI** - Weathered Iron **W** - White	**CR** – Clear lens **FR** – Frosted lens **PR** – Prismatic lens	5 7 9 13* 22	120 208 240 277 **MT** - Multi-tap

Lamp not included with fixture, order separately. For available lamps, see Lamp Guide, Vista catalog.
* - Ballast available in 120 or 277 volts only.

Vista Professional Outdoor Lighting reserves the right to modify the design and/or construction of the fixture shown without further notification.

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FAX: (888) 670-VISTA (8478) • email@vistapro.com • www.vistapro.com

TYPE W1

LED COMPACT FLOODLIGHT
30-WATT LED
(E-CF3L SERIES)

Applications: Building facades, displays, uplighting and signs. Also effective as security lighting, for storage areas and commercial sites.
Typical Mounting Height: 8 to 15 feet

SIGN LIGHTING

CREE LEDs



4.75"**D** x 7.75"**W** x 6"**H**
Weight: 3.0 lbs.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C [1]	Comparable To:
E-CF3L03C2(*)	30W LED Cool White	120V-277V	3000	5000K	70	76,000 Hours	100W PSMH
E-CF3L03N2(*)	30W LED Neutral White	120V-277V	3000	4000K	70	76,000 Hours	100W PSMH

(*) Specify finish color. Z=Dark Bronze, W=White

[1] Calculated L_{70} based on 6,048 hours of LM-80 testing: >36,000 hours

Performance
- Estimated 76,000 hours of maintenance-free operation to L_{70}
- Minimum starting temperature: -40°F
- 5-year limited warranty

Electrical
- Non-dimmable
- Universal voltage (120V through 277V)

Construction & Materials
- Durable die-cast aluminum housing
- Polyester powder coat white or dark-bronze finish for extra corrosion protection
- 1/2-inch NPS die-cast swivel fitter included
- Tempered glass lens, thermal shock and impact resistant
- Cree® LEDs inside

Regulatory
- UL listed for wet locations

e-conolight®

Due to continuous product improvement, information in this document is subject to change. All published photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory. Fixture photometry was completed on a single representative fixture. Actual production units may vary up to ±10% of initial delivered lumens. Lumen maintenance values at 25°C (77°F) are calculated per TM-21 based on LM-80 data and in-situ fixture testing.

1501 96th Street, Sturtevant, WI 53177 | Phone (888)243-9445 | Fax (262)504-5409 | www.e-conolight.com

TYPE W2

PREMIUM LED FLOODLIGHT - SMALL 72-WATT LED (E-HL5F/S SERIES)

Applications: Building facades, displays, uplighting and signs. Also effective as security lighting, for storage areas and commercial sites.
Typical Mounting Height: 8 to 20 feet



CREE LEDs

DLC QPL LISTED

6"D x 10.75"W x 12.25"H
Weight: 8.4 lbs.
(Dimensions include fitter)

FLAG LIGHT

CHOOSE FROM TWO HIGH-QUALITY OPTICS

40° Flood
Perfect for general illumination applications like parking lots and signs.

20° Spot
Use when you need a precise, focused beam of light like accenting architecture.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	Beam Angle/ Photometric Distribution	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C [1]	Comparable To:
E-HL5F06C2Z	72W LED Cool white	120V-277V	6150	40° Flood	5000K	70	50,000 Hours	150W PSMH
E-HL5F06N2Z	72W LED Neutral white	120V-277V	6150	40° Flood	4000K	70	50,000 Hours	150W PSMH
E-HL5S06C2Z	72W LED Cool white	120V-277V	6150	20° Spot	5000K	70	50,000 Hours	150W PSMH
E-HL5S06N2Z	72W LED Neutral white	120V-277V	6150	20° Spot	4000K	70	50,000 Hours	150W PSMH

[1] Calculated L_{70} based on 6,048 hours of LM-80 testing: >36,000 hours

Line Current Data

Voltage	Operating Amperes
120V	0.61
277V	0.28

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TYPE W2

PREMIUM LED FLOODLIGHT - SMALL
72-WATT LED
(E-HL5F/S SERIES)

Performance

- Estimated 50,000 hours of maintenance-free operation to L_{70}
- Minimum starting temperature: -40°F
- 5-year limited warranty

Construction & Materials

- Die-cast aluminum housing and lens frame
- Dark Bronze polyester powder-coat finish
- Tempered glass lens, thermal shock and impact resistant
- Precise optical reflector
- Heat dissipating fins
- Suitable for ground mounting, uplighting & downlighting
- 1/2" NPS adjustable fitter included
- Cree® LEDs inside

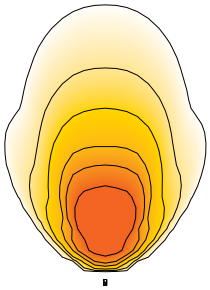
Electrical

- Non-dimmable
- Universal voltage (120V through 277V)

Regulatory

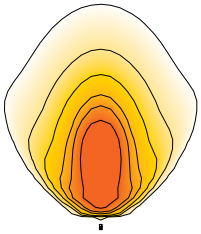
- UL listed for wet locations

Flood



E-HL5F06N2Z fixture mounted at 15 feet with 60° tilt.

Spot



E-HL5S06C2Z fixture mounted at 15 feet with 60° tilt.

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Due to continuous product improvement, information in this document is subject to change. All published photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory. Fixture photometry was completed on a single representative fixture. Actual production units may vary up to ±10% of initial delivered lumens. Lumen maintenance values at 25°C (77°F) are calculated per TM-21 based on LM-80 data and in-situ fixture testing.

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TRZP Series

Catalog No.

Job Name:

TYPE W4

PATIO LIGHTING AND WALKWAY



Features & Specifications

Material
Reflector hat is made from heavy gauge spun aluminum. Yolk is heavy die cast aluminum. Lens jar is clear tempered glass.

Finish
Thermoset TGIC polyester powder coat paint. Underside of reflector hat is white other surfaces are customer selected color.

Ballast
Electronic (CF) - 120v, normal power factor (NPF), optional 120-277 volt, high power factor(HPF)
Electronic (MH) - 120-277 volt, high power factor
Min. starting temp -30 C / -20F

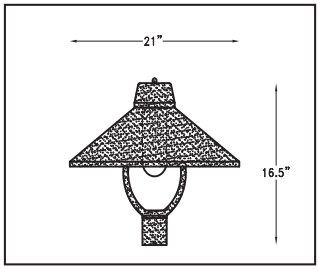
Magnetic (MH) - 120v, normal power factor (NPF),

Mounting
Mounts to a standard 3' round pole. Intended for mounting 8-12 feet above grade with either mounting plate or direct burial.

Warranty
Two year product warranty, exclusive of lamps.

Features
- Contemporary architectural grade outdoor fixture
- UL wet location listed
- Easy re-lamping
- Available with battery backup
- Dark Sky

TRZP-21
Height - 16 1/2"
Width - 21"
Depth - 21"



Example: TRZP-21-U-1T42-3-B1

Model	Voltage	Lamping	Kelvin	Finish	Diffuser	Options
TRZP-21	**A** 120V, NPF *(Elec)* **1** 120v *(Mag)* **Optional Voltage** See price list for Pricing **U** 120-277v *(Elec)*	**1Q26** (1) Q-26w Elec **1T32** (1) T-32w Elec **1T42** (1) T-42w Elec **M050** 50w MH Mag	**2** 2700K **3** 3500K **4** 4100K **T** Clear	**B1** Satin Black **Optional Finishes** See color chart for Pricing		**Pole Options** See price sheet

28435 Industry Drive., Valencia, CA 91355
West Coast Sales: 800-325-4448 ● fax 800-323-2346
East Coast Sales: 866-350-0991 ● fax 866-490-5754
www.lightwayind.com ● sales@lightwayind.com

MADE IN USA

Lightway
distinctive fluorescent lighting

POLE Options

Catalog No.

TYPE W4

Job Name:

Specifications

Pole
Round, steel, seamless, Wall thickness - 14-gauge (.065")
Nominal dimensions:
O.D. - 3.04"
I.D. - 2.88"
Available in 8', 10', 12' and custom lengths

Flange Bases
1/4" steel plate with slots for anchor bolts
Round - 9" diameter (3 anchor bolt attachment)
Square - 9" square (4 anchor bolt attachment)

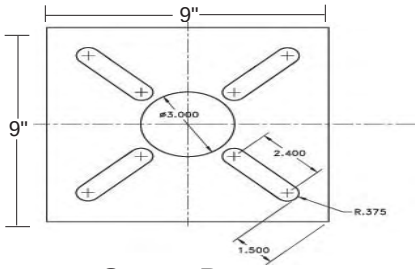
Decorative Covers
Steel decorative covers attach to flange base (round or square)

Anchor Bolt Set
Consists of hex nut, washer and anchor bolt (3/8" diameter X 9 1/2" long with 1 1/4" thread)

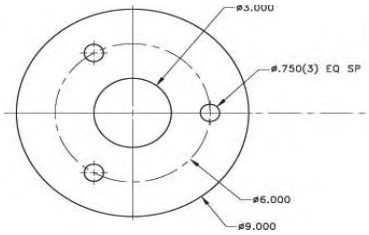
Hand Hole
For flange base attachment only, hand hole is 12" above base with gasket and cover

Installation (consult local building code)
Direct burial - typically 2-feet set in concrete
Flange base - mounts to concrete footing
Templates - consult factory

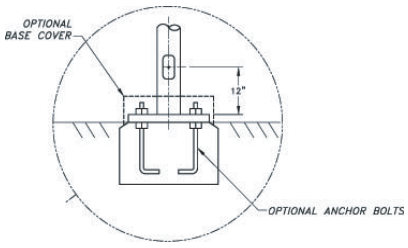




Square Base



Round Base



Typical Flange Installation

Pole Sizes	Discription	Direct Buried	Anchor Bolts	Base Cover	Finish	Options
-81	10 foot pole round, 3 inch OD, steel	Yes		N/A	B1 Satin Black	-88 Base Cover
-82	12 foot pole round, 3 inch OD, steel	Yes		N/A		-89 Set of 3 anchor bolts
-86	8 foot pole round, 3 inch OD, steel with 9" round base		3	RD		-90 Set of 4 anchor bolts
-91	10 foot pole round, 3 inch OD, steel with 9" round base		3		**Optional Finishes** See color chart Consult Factory for Pricing	-99 Custom length, diameter or configuration
-93	12 foot pole round, 3 inch OD, steel with 9" round base		3			
-87	8 foot pole round, 3 inch OD, steel with 9" square base		4	SQ		*Consult factory for pricing*
-92	10 foot pole round, 3 inch OD, steel with 9" square base		4			
-94	12 foot pole round, 3 inch OD, steel with 9" square base		4			

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MADE IN USA

Lightway
distinctive fluorescent lighting

HAWTHORN
RETIREMENT GROUP

Att. Z

December 1, 2015

The City of Portland Maine
Barbara Barhydt
Development Review Services Manager
Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

Re: Retirement Community Project in Portland Maine

Ms. Barhydt:

The principal owners of Hawthorn Retirement Group LLC have been in the business of building, owning and managing retirement communities for more than 35 years. We have a standard operating model that has been perfected over that time and modified to keep up with the ever changing needs of seniors. Our goal is simple, to serve seniors.

By focusing on people first, the principal owners have been extremely successful in not only seniors housing, but other business ventures as well. During the last 35 plus years, Hawthorn Retirement and its principals have developed longstanding relationships with multiple financial institutions that have, over the years, provided construction, interim and permanent financing for multiple projects at a time.

We generally fund our retirement projects with 70% - 80% financing and 20% - 30% capital contributions from our principal owners. I can assure The City of Portland Maine that, not only do we have sufficient financing available to us, each of the principal owners has sufficient liquid assets to complete a $20m plus project such as the project proposed in Portland Maine, even without financing.

Sincerely,

HAWTHORN RETIREMENT GROUP LLC

Susan L. Haider
Treasurer

November 20, 2015
14432

Barbara Barhydt, Development Review Manager
City of Portland
Planning and Urban Development Department
389 Congress Street
Portland, ME 04101

Re: **Site Plan Submittal – Portland Retirement Residence**
802 Ocean Avenue, Portland, ME, Map 411, Lot 7A and Map 416, Lots A6, A7 & A21

Dear Barbara:

Pursuant to the comments received on our application, we offer the following responses:

Comments from Chief Keith Gautreau, Fire Department 10/7/15

Any Blasting will require the appropriate permits and approvals.

Acknowledged.

I need information in regards to hydrants, locations, and how they will achieve adequate pressure for fire protection throughout the proposed structures. I.e. Pump houses, etc. The applicant should work with the Portland Water District to achieve adequate water supply & pressure to the site.

Calculations were submitted by email on 11/10 to Chief Gautreau relative to the required fire flow, system performance without booster pumps and system performance with booster pumps (pump house at Ocean Avenue). In addition, we provided a copy of the map provide by Portland Water District that showed their mains and fire hydrants along Ocean Avenue.

Portland Water District supplied a letter that indicated that sufficient water supply exists for the project. Pressure appears to be adequate for domestic use; however, a booster facility will be installed to deal with high flows and required fire flows.

In addition, a maintenance narrative was provided for the private hydrant and booster pump facility.

I need some information in regards to emergency vehicle access to the West Wing or West side of the proposed 4 story structure.

Based upon a meeting with Chief Gautreau, we have modified the access at the rear of the building to include a paved access (parallel sidewalks with center and side stabilization) as well as stabilization of the green area between wings.

Comments from Barbara Barhydt, Planning Department

I know that the additional information was sent to Mr. Staub and that he continues to have concerns. What is the current status of the stormwater design?

As you know, Mike Farmer, David Senus, you and myself sat down with the abutters to address the concerns in Mr. Staub's email of 10/30/15. We believe that we all did a good job addressing his questions/comments; however, Mr. Staub was still concerned because he could not see how the peak was determined at Study Point 1. This confusion was based upon the fact that the peaks of the upstream reaches did add up close enough to the peak of Study Point 1. As the upstream peaks occur at different times in the modelled storm, adding them would not be way to determine the peak for the downstream study point.

Therefore, we agreed to attempt to provide additional information for Mr. Staub that would allow him to add the peaks of the two upstream reaches at the corresponding times. With a substantial amount of effort, this additional information was provide for him as well as the summation of the two reaches at time intervals prior to, at and following the time of the peak indicated in the model. In addition, we provided him with the published rainfall data from MDEP that is required to be used for the modelling.

Subsequently, Mr. Staub has more concerns as he was able to find other rainfall data on the Internet that indicates rainfall depths greater than the depths used in the modelling (the rainfall data that is the MDEP stormwater regulations that were recently updated). Because of this other data, Mr. Staub performed his own analysis extrapolating from the discharges from our modelling as well as performing a qualitative analysis to come to conclusion that the system does not meet the MDEP Stormwater Standards. Unfortunately, we do not believe that his analysis would meets the requirements of the MDEP Stormwater Standards.

Please note that I do need a letter of financial commitment for the final application.

Documentation relative to adequate financial resources has been request; it will be provided under separate cover.

As the project is a Level III Site Plan, the project needs to address the Transportation Demand Management requirement.

Level III Site Plans are required for projects that would appear to have greater impacts because of their size, density or use. For most Level III Site Plans, transportation and traffic impacts would be those areas with the greatest impact. This project is unique in that transportation and traffic impacts are greatly reduced because of the use and the community transportation that is provided by the project. Accordingly, we hereby request a waiver from the Transportation Demand Management analysis typically required for Level III site plans.

Comments from Michael Farmer, P.E., Public Works Department

1. The level spreader near CB-7 (Grading and Drainage Plan) should be moved easterly so the discharge is not directly above the house at 804 Ocean Ave. and so the discharge would reach Ocean Ave. just uphill from the existing drain manhole in Ocean Ave. (i. e. the drain manhole 180 feet southwest of the intersection of the project driveway and Ocean Avenue. A new catch basin should be constructed about 5-6 feet from the edge of pavement (in Ocean Ave.) and connected to the existing storm drain

manhole. The catch basin rim should be lower than the edge of pavement, so the catch basin will collect runoff from a shallow roadside swale just uphill from the new catch basin location.

A discussed in our meeting, sub-watershed 15A and the under drained soil filter have peaks of 0.5 and 1.5 cfs respectively in the 25 year event, We have modified the plans to e to convey these runoffs to the proposed cutoff ditch. This layout will further reduce the native watershed that drains to the adjacent lot. The overall benefit of this design and changing the discharge to the alternate shown for the under drained soil filter is that less discharge is being put in the natural conveyance channel. This change is seen in that the peak discharge and stages at Pond 66P, the 24" culvert underneath Ocean Avenue. Furthermore, it will further reduce the natural drainage area that flows to the back of the residences along Ocean Boulevard, it retains most of the natural buffer and decreases the blasting required for the outfall, sub-watershed 11.

Although these changes resulted in the peak at Study Point 1 increasing slightly as a result of timing issues, we have modified the outlet of the under drained soil filter to hold back more discharge in the peak. Result: we now are able to match the pre-development peak at Study Point 1 in the post model. This design results in an overall decrease in the flow through the natural channel behind the houses that front along Ocean Boulevard. As discussed, this is the best scenario for the project.

2. On the sidewalk plan, the Ocean Ave. r. o. w. line on the east side of Ocean Ave appears to be incorrectly shown. The sidewalk plans indicates a right of way width of up to 56 feet wide; whereas City records indicate the right of way is 49.5 feet wide. We request that the applicant check this boundary line and revise the plan as necessary.

   The east right-of-way line of Ocean Avenue has been adjusted as noted.

3. There are two existing street monuments in the proposed sidewalk construction area. The sidewalk plan should show the monuments. The plan should state that the monuments shall be protected, and they should not be disturbed during construction, unless they need to be cut down or reset. If the monuments need to be altered to accommodate the sidewalk, contractor shall either cut them down or replace them as directed by the Engineering Division of the City. If the monuments have to be replaced, the replacement monuments shall be installed in conformance with the City's technical standards.

   The notes have been added to the plans as requested.

4. The grading and drainage plan shows a proposed connection of a 12-inch storm drain into an existing 18-ich City storm drain in Ocean Avenue. The proposed connection is an "Inserta-T." A Tee connection should not be used; a new, 4-foot diameter manhole should be constructed for such a connection.

   As discussed with Public Works, the existing drainage is essentially on top of the existing sanitary line; therefore, a drainage manhole would be sitting on top of the sanitary line with approximately 1 foot of separation. As agreed upon, we have indicated that the connection will be made into the existing 18" storm line (PVC) by cutting out a segment of the line and installing an 18" x 15" wye connection with a solid sleeve.

5. One of the plans in the City's archives shows an underground telecommunication line along Ocean Avenue in the sidewalk construction area. The location of this utility should be verified and shown on the sidewalk plan.

   We have contacted a representative at Fairpoint relative to their facilities and their records indicate that their underground facilities terminate at the pole after Ashley Lane. We have also contacted Time Warner and they have no underground facilities in Ocean Boulevard. As such, the sidewalk construction would not affect any of their underground facilities.

6. Where the new sanitary sewer from the project joins the existing sanitary sewer manhole, the project sewer should be re-aligned so it enters the existing manhole at a 90 degree angle to the existing influent pipe to the manhole. The new pipe should enter the manhole 0.1 feet above the outflow pipe. The plans should indicate that the manhole channel will have to be rebuilt to accommodate the new pipe, and that bypass pumping will be required to allow proper construction of the new manhole channel in dry conditions.

   The proposed gravity main into the project has been designed nearly perpendicular to the trunk line in Ocean Avenue at 85°. In past projects, this slight discrepancy has been handled in the construction of the new channel in the manhole. The invert for the proposed gravity line has been shown to be 0.2' above the outlet to account for any possible discrepancy in the structure as-builts; usually a new invert up to 0.5' higher than the outlet is not an issue. Because of the curve in the roadway and the numerous utilities that need to be accommodated, obtaining 90° will be difficult.

   We have further investigated the potential flow depth and velocity and transmitted this information to Public Works. It appear that the flows form the project would be confined in the modified channel(s) of the manhole

   We have added the following note to the plan: "The work for construction of the channel and reconnection of the existing channel bench within the manhole shall be done to the satisfaction of the Wastewater Maintenance Department. The work shall be coordinated through the engineer and John Emerson, City of Portland Wastewater Department, 207-318-0239. Contractor will be responsible for bypass pumping of upstream flows during the manhole work."

7. The sidewalk plans should be revised to state that where ledge removal is required to construct the sidewalk along Ocean Avenue, the ledge should be removed so there is at least two feet of level ground behind the sidewalk.

   Plans have been changed as requested.

Comments from Jeff Tarling, City Arborist

Overall the plant density for the landscape appears to meet city standards. "Tree Save" areas inside the limit of work appears to be nonexistent perhaps due to grading. Access to existing trails should be shown on plan and perhaps enhanced in places for resident use.

Per our coordination with Portland Trails, a new trail connection is shown on the project plans (specifically labelled on the Overall Site Palm, Sheet 4 of 14) for access from Ocean Avenue. Most of the trails are inaccessible from the development parcel because of the grade changes on site. We have agreed to provide a resident only trail off the eastern parking area where the grades will allow a

connection point.

Native tree & plant recommendation / condition - Recommend using a higher percentage of native plants, trees & shrubs.

The 802 Ocean Avenue site is located in a "Oak - Pine" woodland with a great percentage of existing native trees and plants, the native plant types are more adaptable to the site from a sustainability perspective, and fit into the existing area and offer environmental and habitat benefits. Nonnative ornamental plants should be focused around the building envelope with a greater percentage of native plant types around the edges and to reduce invasive plant contamination into the existing native woodlands. This is an important feature of the site and should be a condition of approval. There are many useful native plants available that would fit into this site and would meet the landscape objectives of creating seasonal interest. Attached useful links for consideration. Note: Areas with thin soils, depths to bedrock may consider using smaller caliper sizes to better acclimate to site. Planting around the proposed pond should be all native to blend into the surrounding area - Larch, Red Maple, Tupelo, Amelanchier clump form would be recommended. Sweet fern would be highly recommended in the rocky, shallow soil exposed ledge areas.

The area around the pond does consist of primarily native plant material. Jeff Tarling stated that the White Spruce, Eastern Red Cedar, Amelanchier trees and native shrubs specified were acceptable selections during our follow-up telephone conversation. Sweet Fern was incorporated into the plant list.

Cut / Ledge areas - exposed ledge faces should consider risk reduction measures such as fencing, landscaping, or other.

The top of all ledge cuts on the on slope side of the development adjacent to the trail areas are proposed to have green vinyl coated chain link fence (Site Plan, Sheet 5 of 14).

Landscape tree & plant recommendations:

a) Trees that should not be used, or are not on the City Recommended tree list include:

Ash species due to the threat of Emerald Ash borer and likely future impact or loss of this species in Maine. Listed as 'Fraxinus Penn. Patmore Green Ash"

(9) Chestnut Oak and (6) Tupelo were substituted for the Patmore Ash trees.

b) Non native tree species alternative recommendations:
Ginkgo - 16, used to line the driveway, while a good urban tree, site would be perhaps better suited for 'Bowhall" or 'Karpick' Maple, 'Regal Prince' Oak, which are upright shaped tree forms more in keeping with a native plant theme.

Jeff Tarling agreed that the Ginkgo trees, while non-native, provided a nice effect lining the length of the driveway while not growing too broad to inhibit service delivery vehicles accessing the site.

c) Alternative native tree recommendations:
Acre rubrum - Red Maple suitable for wet areas, Amelanchier - clump form, Betula popuulifolia (gray birch), Larix laricina, (Eastern Larch) suitable for wet areas, Nyssa suitable for wet areas, Ostrya, Oxydendrum - ornamental, native pines - Pinus resinosa (Red Pine), P. rigida (Pitch Pine), P. strobus (White

Pine), P. bansiana (Jack Pine), Quercus rubra (Red Oak), Q. Prinus (chestnut oak) tolerates dry sites and windy conditions.

Amelanchier, Nyssa (Tupelo) and Chestnut Oak are included in the plant list.

Tree Save / Construction Measures - Condition of Approval:

Plan shall include tree protection measures and notes on how to avoid construction damages such as no storage of construction equipment or supplies in the root zone of 'tree save' areas. Limit of work / 'Tree Save' shall be in place at the time of Pre-construction meeting as shown on plan. Plan currently shows 5' tree protection fence & silt fencing, both are needed. Recommendations in the attached guidelines should be included in construction management plan, International Society of Arboriculture recommendations:

Tree Protection Measure Notes and Detail have been added to Sheet A1.3b.

Comments from Thomas Errico, P.E., T.Y. Lin, Traffic Peer Reviewer

The applicant conducted a trip generation analysis and I find the methods used to be acceptable. The project does not require a Traffic Movement Permit and would not be expected to have a significant impact on traffic operations and safety in the vicinity of the project.

Agreed.

I generally find the Ocean Avenue Sidewalk design to be acceptable. I need to investigate a need for a crosswalk across Ocean Avenue and I will coordinate with DPS on this issue. I would note that if a crosswalk is desired, it will need to be coordinated with pedestrian crossings from Ocean Ridge. Plans note that the centerline is being changed. Specific details on the change and lane width of Ocean Avenue shall be provided.

The Plan and lane geometrics have been reviewed by Department of Public Services (Public Works) and found to be acceptable.

In general, I find the site circulation and the parking layout to be acceptable. I would note that the sidewalk from the easterly parking lot is indirect and the preference would be to have the sidewalk on the building side of the roadway.

The easterly parking is to be utilized mainly by employees and the garage is for the managers' vehicle and complex's bus. Based upon the use, and minimal distance traversed based upon which side it is located, the applicant prefers the location of the sidewalk as shown on the plans.

The applicant should provide a detailed parking analysis that supports the project supply.

Hawthorn Retirement Group has developed and managed approximately 400 similar facilities throughout the United States. Their experience is that along with the moving into one of their facilities comes the time with their residents cease to and realize that driving is better left to others. Although parking requirements vary from municipality to municipality (from the extremes of too few to many), they have found that a ratio of 0.7 spaces per suite has worked well for their facilities. Enclosed is a narrative and data form a majority of the facilities that they have developed.

Bicycle racks should be provided for the site to serve employees, guest, and residents that may bike.

A bicycle rack has been provided near the entrance to the facility.

Comments from David Senus, P.E., Woodard & Curran, Engineering Peer Reviewer

1. The Applicant has provided letters from utilities confirming capacity to serve the proposed development.

   Acknowledged.

2. The project will disturb more than one acre of land, therefore a Notice of Intent (NOI) to Comply with the Maine Construction General Permit must be filed with the MaineDEP. A copy of this NOI should be forwarded to the City Planning Office prior to the start of construction.

   Agreed.

3. The Applicant should discuss whether the proposed driveway culvert crossing of the small wetland channel will require any permitting action by the MaineDEP or USACOE; has the channel been reviewed to determine if it should be characterized as a stream?

   Response to this comment was provided by email to Barbara Barhydt on October 23, 2015 and included in the report to the Planning Board.

4. In a letter contained in the application, the Maine Department of Inland Fisheries and Wildlife recommended conducting vernal pool surveys within the project boundary by a qualified wetland scientist prior to final project design to determine whether there are Significant Vernal Pools present in the area. Has this occurred and if so, were any significant vernal pools identified on the site?

   The site was reviewed in the Spring of 2014 by Gary Fullerton of our office and again in the Spring of 2015 and no significant vernal pools were identified.

5. 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. In addition, the project will result in greater than 1 acre of new impervious area, and is therefore subject to review under MaineDEP Chapter 500 standards. We offer the following comments:

   a) Basic Standards: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in general accordance with Appendix A, B, & C of MaineDEP Chapter 500; however the following items should be addressed:

      i. The grading and drainage plan should specify locations for proposed sediment barriers downgradient of the proposed work, particularly along the southern side of the disturbed project area.

         The sediment barriers were in a CAD layer which had been turned off; they are now shown.

ii. Details, notes and plan callouts should be included describing temporary or permanent stabilization measures on steep slope areas (greater than 3:1) such as erosion control matting, rip rap, or other measures (this comment is not applicable to ledge cut areas where the finish surface will be exposed ledge).

A detail has been added to the plans for the placement of erosion control blanket. In addition, a note has been added to plans that state that all exposed granular areas with a 3:1 slope or greater or any drainage channel that is not rock lined will be stabilized with the erosion control blanket.

iii. A significant amount of earthwork will be occurring at the site, with large quantities of materials removed from and imported to the site. Staging and access along Ocean Avenue will be an important consideration and should be outlined in a detailed construction management plan prior to the start of construction. Additional notes should be added to the current plans with requirements for monitoring and sweeping of Ocean Avenue throughout the duration of construction to ensure the Right-of-Way is properly maintained with minimal dust and minimal tracking of materials.

Notes have been added to the plans that since the access is the only connection to Ocean Avenue, the contractor shall be diligent in monitoring and sweeping the roadway of Ocean Avenue and up keep on the construction entrance.

b) General Standards: The project will result in an increase in impervious area of approximately 2.9 acres. As such, the project is required to include stormwater management features for stormwater quality control. The Applicant has proposed a Subsurface Sand Filter and Underdrained Soil Filter system. Both systems are generally compliant with the requirements of the General Standards; however, several comments must be addressed as follows:

i. Stormwater quality calculations included in the application account for 124,410 SF of new impervious area, which differs from the 127,631 SF reported on the project data sheet. The Applicant should clarify.

There was a late reduction in impervious area that was not caught on the project data sheet. The project data sheet have been updated to include the corrected areas as a result of the fire access modification at the rear of the building.

ii. The Exploration Location Plan prepared by SW Cole indicates that no borings have been conducted in the areas of the proposed Subsurface Sand Filter and Underdrained Soil Filter. Soil exploration should be conducted in these areas per the MaineDEP Stormwater BMP Manual to verify depth to groundwater and bedrock, or appropriate provisions should be taken with these system to anticipate the possible presence of bedrock and groundwater in the excavation.

Per the extensive soils report that has been done, we know the site is consistent in its subsurface strata. As with other project permitted under MDEP Stormwater Law with similar conditions, the areas for the proposed filters will need to be over-excavated and a liner installed as shown in the project's details.

iii. In reference to the Subsurface Sand Filter, per Chapter 7.3 of Volume III of the MaineDEP Stormwater BMP Manual, the overflow outlet shall not be located below the elevation of the storage depth of the water quality volume (in other words, the treatment volume must be discharged solely through an underdrain sand bed and underdrain pipe system). As proposed, the 15" overflow outlet is below the peak depth of the water quality volume.

The lowest outfall orifice has been raised to elevation 126.80, the elevation of the water quality volume in the system.

c) Flooding Standard: The project will result in an increase in impervious area of approximately 2.9 acres. As such, the project is required to include stormwater management features to control the rate of stormwater runoff from the site. The subsurface storage system and underdrained soil filter system are proposed to temporarily detain runoff on the site, and to discharge runoff at a rate that is at or below the existing condition. The Applicant has noted that there is a minor increase in the peak discharge rate from the primary study point (SP-1) in the 25-year storm event (0.4 cfs, or less than a 1% increase); with other storm events at or below the existing condition. These model results would indicate that the project is largely compliant with the Flooding Standard, however, several comments should be addressed as follows:

i. The models utilize inconsistent sheet flow lengths and time of concentration measurements for certain unchanged areas of the site when evaluating the pre- and post-development conditions. The models should be revised to utilize a consistent approach in the pre- and postdevelopment condition with regard to determining Time of Concentration in all subcatchment areas.

We have changed the upper flow paths of post sub-watersheds 20 & 40 to be consistent with pre sub-watersheds 2 & 4. As David discussed at our meeting, these adjustments did not affect the stormwater model.

ii. The plans and model should be checked to ensure consistent orifice dimensions and invert elevations for the Subsurface Sand Filter and Underdrained Soil Filter. For instance, within the model, Pond 210P: Sand Filter mc3500 includes a 1.0" Vert. Orifice/Grate X 2.00 at elevation 121.00'; however, the detail shows three of these 1.0" orifices at elevation 121.87. Also within the model, Pond 220P: UDF includes a 0.9" Vert. Orifice/Grate (Device 1) at elevation 122.83'; however, this does not appear to be consistent with the details for the underdrained soil filter basin or OCS-2.

The plans and calculations have been checked to insure that that the orifice dimensions and inverts in both the model and construction plan are in agreement.

iii. Sheet 6 of 14 – Discharge pipe SD 17 from CB-7 and the Underdrained Soil Filter discharge to a level spreader that, based on the downhill topography, could result in additional flow running onto a neighboring property. This outlet pipe and level spreader should be repositioned to the east of the currently proposed location such that flow below the discharge will remain on the project property prior to entering into the ROW.

Per our meeting, the discharge has been changed as indicated in the Public Work comment responses above.

iv. Based on the findings of the geotechnical engineering report, high groundwater conditions exist at the site. Given the large "cut" into the existing grade at the site and the perimeter foundation drains proposed around the building, the Applicant and their geotechnical engineer should comment on what level of base flow may be anticipated from the foundation drain system discharging into the drainage channels. The discharge from the foundation drain system should be factored into the stormwater model. Also, the foundation drain outlet depicted on Sheet 6 of 14 may be in conflict with the corner of the subsurface sand filter system; the Applicant should verify.

This condition has been discussed with S.W.COLE. S.W.COLE recommends a trenched French drain at the bottom of the uphill ledge cuts adjacent to the easterly parking lot and behind the main building. The French drain will be filled with loose processed ledge material with an underdrain connection at one end that directly discharges to the drainage channel bypassing the storm drain system. The foundation drains will also bypass the storm drain system. The expectation is that the site groundwater will stabilize to the new grades and become no more than a seasonal weep discharge, similar to the adjacent site with rock cuts.

6. StormTech recommends providing additional access structures when Isolator Rows exceed 50-feet. The Applicant should verify that the design, as proposed, provides adequate means of access for inspection and maintenance of the system through communication/verification by Stormtech.

   As the length of the isolator rows are 100', we have shown manholes at the ends of the isolator rows in lieu of the riser ports.

7. The Grading and Drainage Plan should be revised to indicate the location of the spillway for the Underdrained Soil Filter.

   The plan has been changed to indicate the location of the spillway; the spillway drains to the proposed access road cutoff ditch.

8. Sheet 6 of 14 – A drain manhole should be provided for the 12" storm drain connection into the 18" storm drain in Ocean Ave. The storm drain pipe material should be identified to meet City Standards within the roadway right-of-way (Technical Manual Section 2.5.2).

   Per our response above, we have coordinated with Public Works and will make the connection as indicated. On page 8.

9. Sheet 14 of 14 - The proposed sidewalk along the south edge of Ocean Avenue has several angles in the layout to avoid an adjacent slope and utility poles. These angles should be smoothed out as radius transitions to follow a "desire line" of travel.

   Plans have been changed as requested.

We and our clients are appreciative of the relationship that we have had with the City of Portland, City staff and Planning Board as our project has moved through the Planning Board review process.

If you have any questions, relative to this comment responses and clarifications, do not hesitate to contact me. Thank you once again for your time relative to our application.

Sincerely,

SEBAGO TECHNICS, INC.



Robert A. McSorley, P.E.
Senior Project Manager

RAM:ram/llg
Enc.

cc: Mark Lowen, Lenity Architecture
Kristi Neznanski, Lenity Architecture
Dan Roach, Lenity Architecture

Section 1. Application Forms

- Site Plan Application
- Site Plan Checklist

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

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. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are ***paid in full*** to the Inspections Office, City of Portland Maine by method noted below:

☐ Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐ Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☒ I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

Applicant Signature: _____ Date: 9/17/15

I have provided digital copies and sent them on: _____ Date: 9/17/15

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.

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 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
(207) 874-8721

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

PROJECT NAME: **Portland Retirement Residence**

PROPOSED DEVELOPMENT ADDRESS:

802 Ocean Avenue

PROJECT DESCRIPTION:

Site Plan for 150 Unit Congregate Care Facility

CHART/BLOCK/LOT: **Map 411, Lot 7A, Map 416, Lots A6, A7 & A21**

PRELIMINARY PLAN **N/A** **(date)**

FINAL PLAN **9/17/15** **(date)**

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Lenity Architecture LLC c/o Mark Lowen OBO Business Name, if applicable: Hawthorne Development Group, LLC Address: 3150 Kettle Court SE City/State : Salem, OR Zip Code: 97301	**Applicant Contact Information** Work # 503-399-1090 Home# Cell # 503-586-4104 Fax# 503-399-0565 e-mail: markl@lenityarchitecture.com
Owner – (if different from Applicant) Name: Graves Hill Land Company, LLC Address: 16 Tiffany Lane City/State : Saco, ME Zip Code: 04702	**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: Lenity Architecture LLC c/o Mark Lowen Address: 3150 Kettle Court SE City/State : Salem, OR Zip Code: 97301	**Billing Information** Work # 503-399-1090 Cell # 503-586-4104 Fax# 503-399-0565 e-mail: markl@lenityarchitecture.com

Engineer	**Engineer Contact Information**
Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE	Work # 207-200-2074
Address: 75 John Roberts Road, Suite 1A	Cell # 207-939-1809 Fax# 207-856-2206
City/State : South Portland, ME Zip Code: 04106	e-mail: rmcsorley@sebagotechnics.com
Surveyor	**Surveyor Contact Information**
Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE	Work #
Address: Same as Above	Cell # Fax#
City/State : Zip Code:	e-mail:
Architect	**Architect Contact Information**
Name: Lenity architecture, c/o Mark Lowen	Work # 503-399-1090
Address: 3150 Kettle Court SE	Cell # 503-586-4104 Fax# 503-399-0565
City/State : Salem,OR Zip Code: 97301	e-mail: markl@lenitygroup.com
Attorney	**Attorney Contact Information**
Name: Hopkinson & Abdonndanza, c/o James Hopkinson	Work # 207-772-5845
Address: 511 Congress Street, Suite 801	Cell # Fax# 207-874-2330
City/State : Portland, ME Zip Code: 04101	e-mail: jhopkinson@hablaw.com

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Cash or Check payable to the City of Portland)

Level III Development (check applicable reviews)

___ Less than 50,000 sq. ft. ($500.00)
___ 50,000 - 100,000 sq. ft. ($1,000)
_X_ 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 ($40.00 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 ____ x $25/lot = _____
___ Site Location ($3,000, 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

APPLICATION SUBMISSION:

1. **All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the Electronic Plan and Document Submittal page of the City's website at http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal**

2. **In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.**

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. **One (1) full size site plans** that must be **folded.**
2. One (1) copies of all written materials as follows, unless otherwise noted:
   a. Application form that is completed and signed.
   b. Cover letter stating the nature of the project.
   c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Refer to the application checklist (attached) for a detailed list of submittal requirements.
Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), which includes the Subdivision Ordinance (Section 14-491) and the Site Plan Ordinance (Section 14-521). Portland's Land Use Code is on the City's web site: www.portlandmaine.gov Copies of the ordinances may be purchased through the Planning Division.

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:**
	9/17/15

PROJECT DATA

(The following information is required where applicable, in order complete the application)

Total Site Area	**442,875 R-5A, 798,184 Total** sq. ft.
Proposed Total Disturbed Area of the Site	**216,542** 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)	**0** sq. ft.
Impervious Area (Total Proposed)	**126,168** sq. ft.
Building Ground Floor Area and Total Floor Area	
Building Footprint (Total Existing)	**0** sq. ft.
Building Footprint (Total Proposed)	**39,869** sq. ft.
Building Floor Area (Total Existing)	**0** sq. ft.
Building Floor Area (Total Proposed)	**134,646** sq. ft.
Zoning	
Existing	**R-5A**
Proposed, if applicable	**R-5A**
Land Use	
Existing	**vacant**
Proposed	**150 suite congregate care facility**
Residential, if applicable	
# of Residential Units (Total Existing)	**0**
# of Residential Units (Total Proposed)	**150**
# of Lots (Total Proposed)	**N/A**
# of Affordable Housing Units (Total Proposed)	**N/A**
Proposed Bedroom Mix	
# of Efficiency Units (Total Proposed)	**57**
# of One-Bedroom Units (Total Proposed)	**78**
# of Two-Bedroom Units (Total Proposed)	**15**
# of Three-Bedroom Units (Total Proposed)	**N/A**
Parking Spaces	
# of Parking Spaces (Total Existing)	**0**
# of Parking Spaces (Total Proposed)	**102 including garages**
# of Handicapped Parking Spaces (Total Proposed)	**5**
Bicycle Parking Spaces	
# of Bicycle Spaces (Total Existing)	**0**
# of Bicycle Spaces (Total Proposed)	**6**
Estimated Cost Of Project	**$18,000,000.00**

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. **N/A**
☒	☐	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 **N/A**
☒	☐	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 contined 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.

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, with corresponding curb lines;	
☒	☐	Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;	
☒	☐	Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;	
☒	☐	Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;	
☒	☐	Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;	
☒	☐	Location of all snow storage areas and/or a snow removal plan;	
☒	☐	A traffic control plan as detailed in Section 1 of the Technical Manual;	
☒	☐	Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);	
☒	☐	Location and proposed alteration to any watercourse;	
☒	☐	A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;	
☒	☐	Proposed buffers and preservation measures for wetlands;	
☒	☐	Existing soil conditions and location of test pits and test borings;	
☒	☐	Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;	
☒	☐	A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;	
☒	☐	Grading plan;	
☒	☐	Ground water protection measures;	
☒	☐	Existing and proposed sewer mains and connections;	

- Continued on next page -

☒	☐	Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
☒	☐	Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
☒	☐	Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
☒	☐	Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
☒	☐	Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
☐	☐	A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
☐	☐	A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
☒	☐	Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
☒	☐	An exterior lighting plan in accordance with Section 12 of the Technical Manual;
☒	☐	A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
☒	☐	Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
2. Hawthorn Development 9310 NE Vancouver Mall Drive, Vancouver, WA 98662, 360-213-1550
3. Name address, telephone number of architect
   Lenity Architecture, LLC, 3510 Kette Court SE, Salem OR 97301 503-399-1090
4. Proposed uses of any structures [NFPA and IBC classification]
5. Type V-A
6. Square footage of all structures [total and per story]
   1st flr- 39,869, 2nd flr - 31,552, 3rd flr - 32,911, 4th flr - 30,314 Total - 134,646 sf
7. Elevation of all structures
   4 story, 47' - 7 3/4"
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
   Shown on plan, NE corner of the building
10. Water main[s] size and location
    8" main
11. Access to all structures [min. 2 sides]
    Access to three sides
12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.
    Building to be sprinklered, details to be reviewed with building plans

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

Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,

E-mail:fjb@portlandmaine.gov

Date: **Revised 10/21/15**

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

Site Address: **802 Ocean Avenue**

Chart Block Lot Number: **Map 411, Lot A7 and Map 416, Lots A6, 17 and A21**

Proposed Use: **Congregate Care Facility**

Previous Use: **Vacant**

Existing Sanitary Flows: **0** GPD

Existing Process Flows: **0** GPD

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

Sanitary Gravity in Ocean 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: **Barbara Barhydt** Phone: **874-8699**

Owner/Developer Name: **Hawthorn Development Group, LLC**

Owner/Developer Address: **9310 NE Vancouver Mall Drive, Suite 200, Vancouver, WA 98662-8210**

Phone: **360-213-1550** Fax: **260-213-1540** E-mail: **robin.goins@hawret.com**

Engineering Consultant Name: **Sebago Technics, Inc. attn: Robert A. McSorley, P.E.**

Engineering Consultant Address: **75 John Roberts Road, Suite 1A, South Portland, ME 04106**

Phone: **200-2074** Fax: **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: **10,230** GPD

Peaking Factor/ Peak Times: **10,230 GPD / 16 hors/day / 60 min/hour x 6 = 64 GPM**

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:	**TBD**
Size of External Grease Interceptor:	**TBD**
Retention Time:	**TBD**
Peaking Factor/ Peak Times:	**TBD**

(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: **0** 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 below, or attached, as a separate sheet)

Notes, Comments or Calculation

150 Residential Units (135 single units and 15 duplex units) and 2 Manager Units

135 units x 60 gpd/unit = 8,100 gpd, 15 duplex units x 120 gpd/unit = 1,800 gpd, manager unit x 210 gpd = 210 gpd, co-manager unit x 120 gpd = 120 gpd. Total: 10,230 gpd.

Section 13. Stormwater Management Plan

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT PLAN

For

Portland Retirement Residence
Portland, Maine

Prepared for

Hawthorn Development Group, LLC
9310 NE Vancouver Mall Drive, Suite 200
Vancouver, WA 98662

September 2015
Revised November 20, 2015

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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

14432

STORMWATER MANAGEMENT PLAN

Portland Retirement Residence
802-828 Ocean Avenue
Portland, Maine

Executive Summary

Hawthorne Development Group, LLC is submitted plans to develop within a 10.17 acre portion of 18.32 acres of undeveloped land off Ocean Avenue into a 150-unit retirement residence. The property is shown as Lot A-7 on City of Portland Tax Map 411 and Lots A-6, A-7, and A-21 on City of Portland Tax Map 416.

The development will create approximately 2.896 acres of new non-vegetated surface and 4.93 acres of new developed area as defined by the Maine Department of Environmental Protection (MDEP).

A majority of the site, roughly 90%, is tributary to Casco Bay via unnamed drainage ways. The remaining 10% of the site, located in the southwest portion of the site adjacent to Wildwood Circle appears to be tributary to Fallbrook. 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 90.1% of the new non-vegetated area and 85.4% 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 an underdrained subsurface sand filter located within the development parking field and 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.

As the project results in an overall reduction in tributary area draining to Fallbrook and has no development within the Fallbrook watershed, the Urban Impaired Stream Standard does not need to be addressed.

14432

STORMWATER MANAGEMENT PLAN

Portland Retirement Residence
802-828 Ocean Avenue
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 undeveloped land with woods land cover comprising of 18.32 acres in Portland.

Land Cover: The site is undeveloped land consisting of wooded land cover. The development site abuts Ocean Ridge to the north, Ocean Avenue and single family residential structures to the east, undeveloped land to the south, and Pheasant Hill Drive development to the west.

Site Topography: The majority of the site (75%) drains in a southeasterly direction towards the existing pipe outlets in Ocean Avenue, with the drainage break located just east of the existing Central Maine Power easement at the rear of the site. The remainder of site drains in a westerly direction away from the proposed development.

Slopes on site range from 5 to 10% in the central portion of the site, within and adjacent to wetland areas, to steeper 15 to 25% slopes along Ocean Avenue and the rear of the site.

Surface Water Features: The majority of the site drains to an existing closed drainage system within Ocean Avenue and a cross culvert across Ocean Avenue. These culverts outlet to an existing drainage way along the northerly side of Eben Hill Road (Ocean's East), continuing to travel in a northeasterly direction, crossing Briarwood, Ocean Woods, Presumpscot Street, on its way to 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
Hollis fine sandy loam	HrB/HrC	D	0.32
Hollis very rock fine sandy loam	HsB/HsE	C	0.32
Scantic Silt Loam	Sn	D	0.49

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 0007C, dated December 8, 1998).

III. Proposed Development

The Applicant is proposing to a 150 unit retirement residence, consisting of 135 single units and 15 duplex units.

Alterations to Land Cover: Completion of the proposed project will result in the creation of 2.896 acres of non-vegetated area and 4.93 acres of developed area.

IV. Downstream Ponds and Waterbodies

The majority project site is tributary to Casco Bay, which is not listed by the Maine Department of Environmental Protection as impaired or threatened. A small portion of the site, located within the southwest portion of the site, is tributary to Fall Brook which is listed by Maine DEP as an Urban Impaired Stream within Chapter 502.

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 13 and in the Inspection, Maintenance, and Housekeeping Plan attached in Attachment 3. 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 an underdrained subsurface sand filter located within the development parking field and a grassed underdrained soil filter located adjacent to the access roadway. The BMP locations are indicated on the attached plans.

A. Underdrained Subsurface Sand Filter

An underdrained subsurface sand filter must detail 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 Storm-Tech Isolator Row sized based on the runoff from ta 1-year, 24 hour storm event. 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 1: *Stormwater Quality Calculations*.

B. Grassed Underdrained Soil Filter

A grassed underdrained soil filter must detail 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 1: *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, and 25-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, and 25-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

*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 confluence of two outlet pipes which discharge on the east side of Ocean Avenue and just north of Eden Hill Road. Runoff from this study point continues through un-named drainage ways, before crossing Presumpscot Street and I-295, before entering Casco Bay.

SP2 is a representative study point located in the southwest quadrant of the development site, adjacent to the existing utility corridor. This study point is where runoff leaves the site and drains to an adjacent lot, before entering Fallbrook.

C. Pre-Development

SP1: SP1 has a total of twelve (12) drainage areas tributary to it, which includes four (4) drainage areas located on the development site and the remaining being offsite drainage areas, such as the east side of Ocean Avenue, Ocean Ridge development, and residential house lots along Ocean Avenue.

SP2: SP2 has a single drainage area (Subarea 4) tributary to it; this study point is located at the property line where drainage crosses the property line in the southwest portion of the site, adjacent to Wildwood Circle.

Subareas 1, 101, 301, 302, and 303 represent the portions of Ocean Ridge condominium development that is tributary to SP1. These areas remain unchanged from pre-development to post-development condition.

Subareas 100 and 300 represent the east side of Ocean Avenue which enter the closed drainage system within Ocean Avenue prior to discharging to SP1. These areas remain unchanged from pre-development to post-development.

Subarea 3 and Subarea 6 are several house lots along the west side of Ocean Avenue, with the development site located at the rear of these house lots. Subarea 3 enters the closed drainage system within Ocean Avenue. Subarea 6 enters two driveway culverts before reaching the 24" Ocean Avenue cross culvert. Both areas discharge to SP1 and remain unchanged from pre-development to post-development.

Subarea 1 is approximately 3.2 acres in area located at the northeast corner of the development site along Ocean Avenue. This area also includes a portion of Ocean Avenue, a portion of two house lots along Ocean Avenue, and a small portion of the abutting Ocean Ridge development site where runoff from developed portions of the site flows through a stormwater buffer easement prior to entering the subject site. Runoff continues along Ocean Avenue gutter/shoulder before entering the closed drainage system at a catch basin located on the west side of Ocean Avenue, roughly opposite Ashley Lane (Ocean Woods development).

Subarea 2 represents a majority of the site to be developed; it's roughly 11.5 acres in size which includes portions of Ocean Ridge, Ocean Avenue, and two resident house lots. Roughly 10.6 acres of the total area is the development site, which is 60% of the total site area. Runoff from Subarea 2 drains to an existing 15-inch driveway culvert prior to reaching and ultimately flowing across Ocean Avenue at the 24-inch cross culvert.

Subarea 4 is roughly 1.2 acres in area located at the southwest portion of the lot where runoff exits the site at the utility corridor adjunct to Wildwood Circle and is ultimately tributary to Fallbrook.

Subarea 5 represents the southeast portion of the site, a single house lot and a portion of Ocean Avenue. Subarea 5 is roughly 1.8 acres in size and drains to the existing Ocean Avenue cross culvert.

D. Post-Development

Pre-development subarea 1 has been divided into four subareas (11, 12, 15A and 15) in the post-development condition. Subareas 11 and 12 have limited

development within the drainage boundaries and respectively represent the south side and north sides of the proposed access. Subarea 15A represents a portion of the access road which will not receive any treatment and will discharge to the wooded area south of the access road. Subarea 15 represents the lower portion of the access which is tributary to the closed drainage system along the site frontage. The total area of these catchments is 4.85 acres, which is greater than the pre-development area of Subarea 1 in the predevelopment, 3.16 acres. The increase in area is a result of the site grading and drainage ditch along the access road.

Pre-development subarea 2 has been divided into 4 subareas in the post-development condition, subarea 20, 21, 22, and 23. Subarea 20 represents the upper and lower portion of the site which will remain undeveloped. A 3-sided box culvert is proposed along the access road so as not to alter the drainage characteristics of existing drainage way which traverses the site. Subarea 21 is the majority of the development footprint and impervious surface which will be collected in the storm drain collection system and outlet to the proposed subsurface sand filter. Subarea 22 represents the upper parking lot and associated access way which will be collected and treated by the grassed underdrain soil filter. Subarea 23 represents the grassed underdrain soil filter.

Subarea 4 in pre-development has been reduced in area by approximately 0.10 acres and is now represented by subarea 40 in the post-development model.

Subarea 50 (subarea 5 in pre-development) has been reduced in area by 0.6 acres but has a minor increase in overall curve number (80 pre vs 82 post).

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)					
					2-year		10-year		25-year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
SP1	23.01	23.10	16.15%	28.68%	17.1	16.0	31.6	31.1	44.2	44.2
SP2	1.21	1.12	0%	0%	1.4	1.3	2.9	2.6	4.1	3.8

As depicted in the above table, post-development peak runoff rates at the two study points will be below pre-development levels for the 2-year and 10 year storm event, and below pre-development levels at study point 2 for the 25-year storm event. For study point 2, the pre-development peak runoff rate is maintained in the post-development condition for the 25-year storm event, which was achieved by detaining project runoff for a longer duration within the underdrain soil filter.

VIII. Water Quality Analysis

To achieve the required water quality treatment, an Underdrained Subsurface Sand Filter is proposed to treat the majority of the development with a grassed underdrained soil filter providing treatment of for the upper parking lot and associated access way. Each treatment measure has been designed and sized in accordance with the current Maine DEP Stormwater Best Management Practices handbook.

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 90.2% and a developed area treatment percentage of 85.6%, which exceeds the required treatment levels of 90% and 75%, 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.

IX. Urban Impaired Stream Standard

As mentioned in Section VII.C of this report, Subarea 4 is tributary to Fallbrook which is listed in Chapter 502 as an Urban Impaired Stream, which requires 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. As a result of the proposed development and project grading, the total drainage area tributary to Fallbrook is reduced by 8% from 1.21 acres to 1.12 acres. No developed area is anticipated within Subarea 4, so no mitigation or compensation fee is proposed.

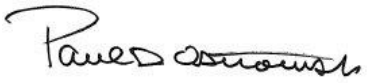
X. Conclusions

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 90.2% of the created impervious surface and 85.6% of the total developed area. Through the implementation of various stormwater best management practices, peak

runoff rates in the Post-development condition have been maintained at or below pre-development condition at the two study points for the 2, 10, and 25 year storm events.

Prepared by,

SEBAGO TECHNICS, INC.





Paul D. Ostrowski, P.E.
Project Engineer

Robert A. McSorley, P.E.
Senior Project Manager

PDO/RAM:pdo/jf
November 20, 2015

Date: 11/20/15

Attachment A

Stormwater Quality Calculations

MDEP GENERAL STANDARD CALCULATIONS
PORTLAND RETIREMENT RESIDENCE
JOB #14432

SUBAREA #	SUBAREA TOTAL AREA	NEW ONSITE IMPERVIOUS AREA	NEW ONSITE LANDSCAPED AREA	NEW DEVELOPED AREA	UNDEVELOPED AREA	TREATMENT METHOD			IMPERVIOUS (AC.)	LANDSCAPED (AC.)
	(AC.)	(AC.)	(AC.)	(AC.)	(AC.)	ID (PRIMARY)	% IMP	% LAND	WP1	WP1
11	1.880	0.053	0.011	0.065	1.815	None				
12	2.607	0.000	0.175	0.175	2.431	None				
15A	0.086	0.059	0.027	0.086	0.000	None				
15	0.273	0.170	0.103	0.273	0.000	None				
20	6.328	0.000	0.118	0.118	6.210	None				
21	3.381	2.165	1.215	3.381	0.000	Sub. Sand Filter (210)	100%	100%	2.165	1.215
22	0.673	0.448	0.225	0.673	0.000	UDF-1 (220)	100%	100%	0.448	0.225
23	0.200	0.000	0.200	0.200	0.000	UDF-1 (220)	100%	100%	0.000	0.200
TOTAL LOTS (AC.)	**15.428**	**2.896**	**2.075**	**4.971**	**10.456**				**2.613**	**1.640**

*TREATED VALUES ONLY INCLUDE AREAS ASSOCIATED WITH THE DEVELOPMENT. OFFSITE AREA NOT INCLUDED IN SITE TREATMENT CALCULATION

TOTAL NEW IMPERVIOUS AREA (SF)	**126,168**	**TOTAL NEW DEVELOPED AREA (SF)**	**216,542**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (SF)	**113,842**	**TOTAL DEV. AREA RECEIVING TREATMENT (SF)**	**185,297**
TOTAL IMPERVIOUS AREA NOT RECEIVING TREATMENT (SF)	**12,326**	**TOTAL DEV. AREA NOT RECEIVING TREATMENT (SF)**	**31,245**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**90.2%**	**% OF DEV. AREA RECEIVING TREATMENT**	**85.6%**

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 1A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	14432 - Portland Retirement Community
SHEET NO.	1 OF 1
CALCULATED BY	PDO DATE 10/23/2014
FILE NAME	PRNT DATE 11/20/2015

Task: Determine the "Percentage of Developed Area to Land Available for Development" in accordance with MaineDEP Chapter 500 rules, Section 4.C.(2)(a)(iii) Table 1, amended date August 12, 2015

Table 1 presents Stormwater Treatment Based on Percentage of Parcel Developed

Percentage of developed area to land avail for development*	Percentage of total impervious area requiring treatment**	Percentage of total developed area requiring treatment**
>70	95	80
65	92.5	77.5
<60	90	75

*Including all contiguous land area owned by applicant, but not including land with greater than 25% sustained slope or consisting of a protected natural resource.

**Percentage may be pro-rated for values between 60% and 70% in left-hand column.

A	Total Land Area within R5A Zone:	442,875.00	square-feet
B	Wetland Areas within R5A Zone:	6,481.00	square-feet
C	25% Sustained Slopes:	32,650.00	square-feet
	Land Avail for Development (A-B-C)	403,744.00	square-feet
	Total Developed Area	216,542.00	square-feet

Percentage of Developed Land: 216542.000 / 403,744.00 = **53.63%**

Perecentage of Developed Land to Land Available for Development is less than 60%, therefore requiring 90% treatment of proposed impervious and 75% treatment of developed area

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JOB	14432 - Portland Retirement Community		
SHEET NO.	1	OF	1
CALCULATED BY	PDO	DATE	7/9/2015
FILE NAME	14432 Structures 15-08-06.xlsx	PRNT DATE	11/20/2015

UNDERDRAINED SUBSURFACE SAND 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 7.3.2
   a. "detain runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
   b. "surface area of the sand filter bed and chamber system must be at least equal to 5% of the impervious area draining to it and 2% of the landscaped area."
   c. "treatment flow rate for the Stormtech Isolcator Row is the projected one year peak flow rate for the drainage area feeding the Isolator Row"

Flow rates:

SC-310	0.10	cfs/chamber
SC-740	0.20	cfs/chamber
DC-780	0.20	cfs/chamber
MC-3500	0.30	cfs/chamber

Tributary to Subsurface Sand Filter #1

Landscaped Area	52,941.00	SF
Impervious Area	94,316.00	SF

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	52,387.00	SF	Area	1,047.7	SF
Total Impervious Area	94,316.00	SF	Area	4,715.8	SF
Required Minimum Surface Area				5,763.5	SF
Provided Surface Area				6,000.0	SF

Channel Protection Volume (CPV)

Required (0.4" X Landscaped + 1.0" X Impervious)

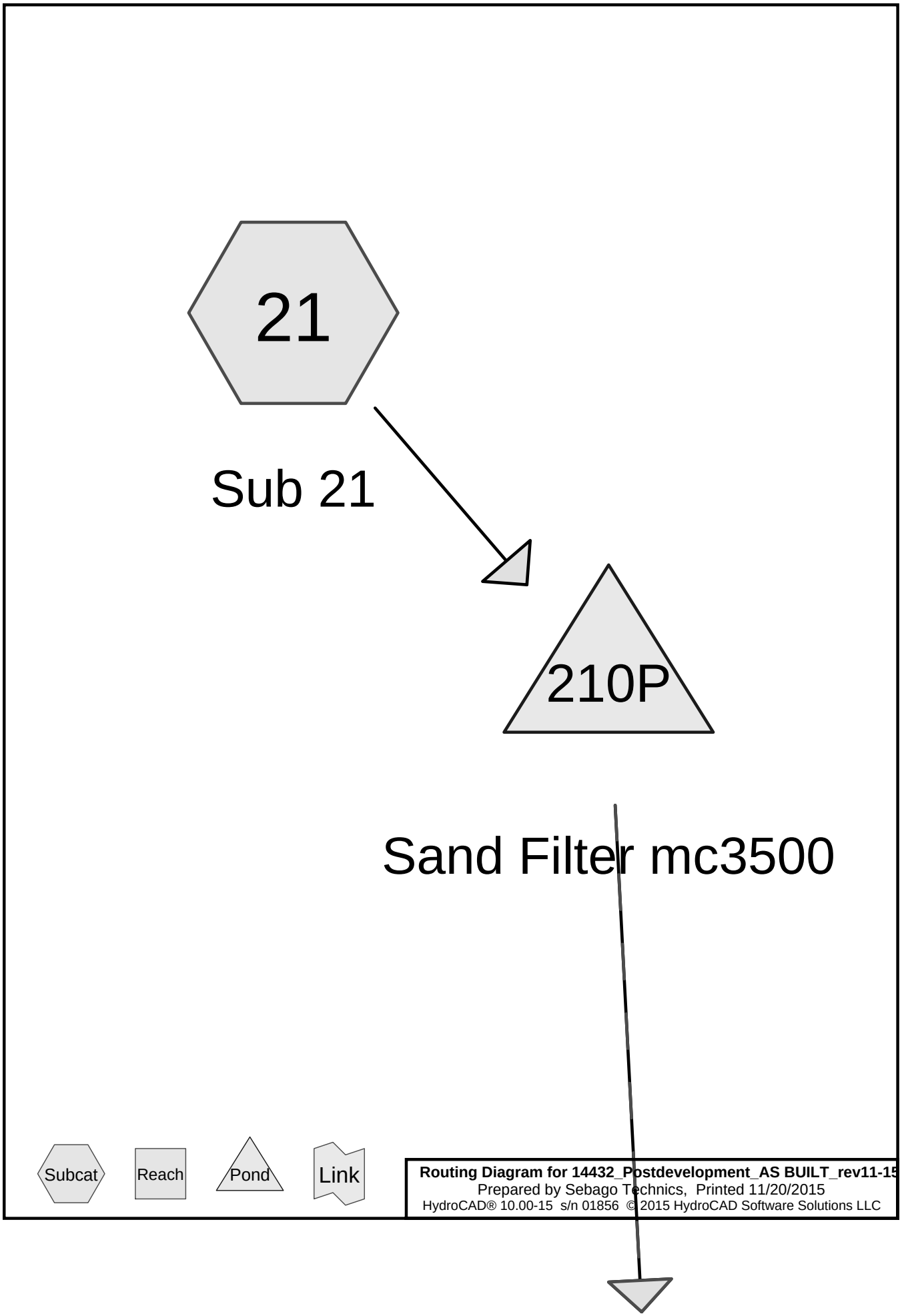
Landscaped Area	52,387.00	SF	Volume	1,746.2	
Impervious Area	94,316.00	SF	Volume	7,859.7	
CPV Required				9,605.9	CF (0.221 AF)
Provided CPV				9,685.00	CF (Elevation 126.80)

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:	7.27	cfs
Iso Row sizing for:	**MC-3500**	**0.3** cfs
Total number of Isolator Row Chambers required:	25	

Proposing two row, each 15 chambers long, for total of 30 chambers.


21
Sub 21
210P
Sand Filter mc3500
Subcat
Reach
Pond
Link
Routing Diagram for 14432_Postdevelopment_AS BUILT_rev11-15
Prepared by Sebago Technics, Printed 11/20/2015
HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 21: Sub 21

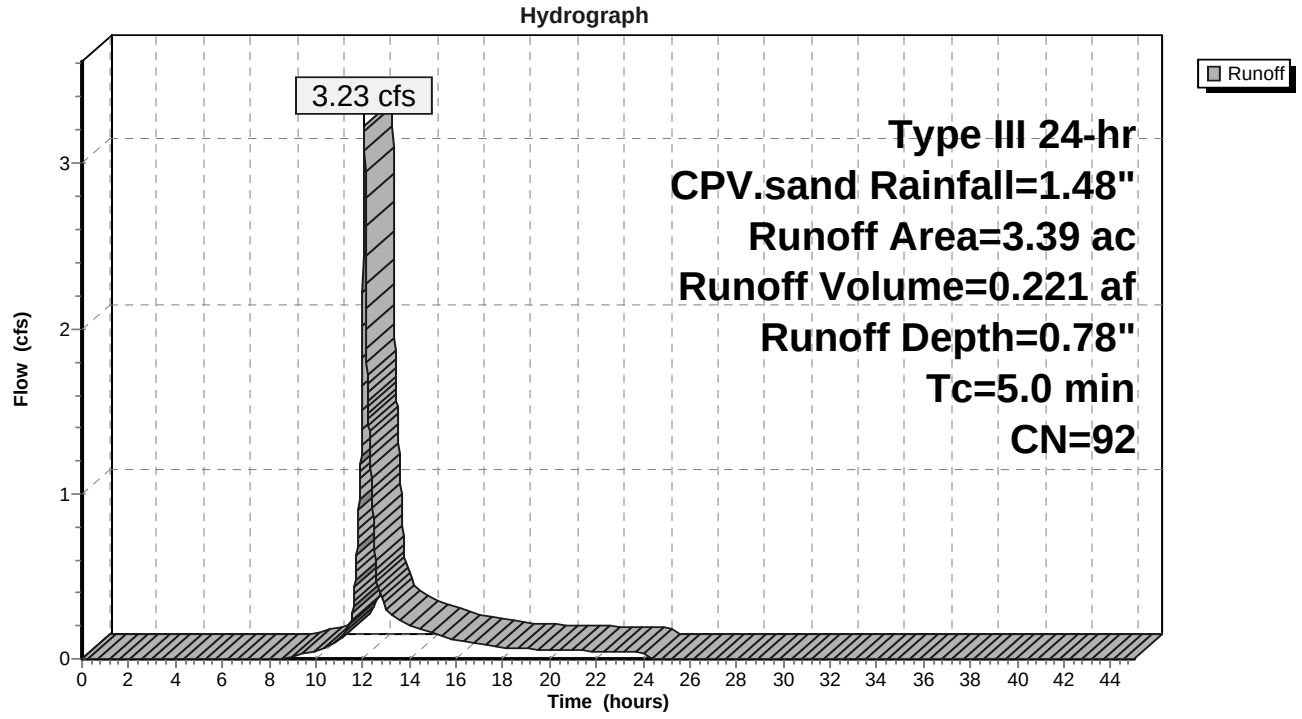
Runoff = 3.23 cfs @ 12.08 hrs, Volume= 0.221 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr CPV.sand Rainfall=1.48"

	Area (ac)	CN	Description
	1.22	80	>75% Grass cover, Good, HSG D
*	2.17	98	Site Development
	3.39	92	Weighted Average
	1.22		35.99% Pervious Area
	2.17		64.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 21: Sub 21



Hydrograph for Subcatchment 21: Sub 21

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	1.48	0.78	0.00
0.50	0.01	0.00	0.00	27.00	1.48	0.78	0.00
1.00	0.01	0.00	0.00	27.50	1.48	0.78	0.00
1.50	0.02	0.00	0.00	28.00	1.48	0.78	0.00
2.00	0.03	0.00	0.00	28.50	1.48	0.78	0.00
2.50	0.04	0.00	0.00	29.00	1.48	0.78	0.00
3.00	0.05	0.00	0.00	29.50	1.48	0.78	0.00
3.50	0.05	0.00	0.00	30.00	1.48	0.78	0.00
4.00	0.06	0.00	0.00	30.50	1.48	0.78	0.00
4.50	0.07	0.00	0.00	31.00	1.48	0.78	0.00
5.00	0.08	0.00	0.00	31.50	1.48	0.78	0.00
5.50	0.09	0.00	0.00	32.00	1.48	0.78	0.00
6.00	0.11	0.00	0.00	32.50	1.48	0.78	0.00
6.50	0.12	0.00	0.00	33.00	1.48	0.78	0.00
7.00	0.13	0.00	0.00	33.50	1.48	0.78	0.00
7.50	0.15	0.00	0.00	34.00	1.48	0.78	0.00
8.00	0.17	0.00	0.00	34.50	1.48	0.78	0.00
8.50	0.19	0.00	0.00	35.00	1.48	0.78	0.00
9.00	0.22	0.00	0.02	35.50	1.48	0.78	0.00
9.50	0.25	0.01	0.03	36.00	1.48	0.78	0.00
10.00	0.28	0.01	0.05	36.50	1.48	0.78	0.00
10.50	0.32	0.02	0.08	37.00	1.48	0.78	0.00
11.00	0.37	0.04	0.12	37.50	1.48	0.78	0.00
11.50	0.44	0.06	0.23	38.00	1.48	0.78	0.00
12.00	0.74	0.22	**2.01**	38.50	1.48	0.78	0.00
12.50	1.04	0.43	**0.70**	39.00	1.48	0.78	0.00
13.00	1.11	0.49	0.31	39.50	1.48	0.78	0.00
13.50	1.16	0.52	0.25	40.00	1.48	0.78	0.00
14.00	1.20	0.56	0.20	40.50	1.48	0.78	0.00
14.50	1.23	0.58	0.18	41.00	1.48	0.78	0.00
15.00	1.26	0.61	0.16	41.50	1.48	0.78	0.00
15.50	1.29	0.63	0.13	42.00	1.48	0.78	0.00
16.00	1.31	0.64	0.11	42.50	1.48	0.78	0.00
16.50	1.33	0.66	0.10	43.00	1.48	0.78	0.00
17.00	1.35	0.67	0.09	43.50	1.48	0.78	0.00
17.50	1.36	0.68	0.08	44.00	1.48	0.78	0.00
18.00	1.37	0.70	0.07	44.50	1.48	0.78	0.00
18.50	1.39	0.70	0.06	45.00	1.48	0.78	0.00
19.00	1.40	0.71	0.06				
19.50	1.41	0.72	0.06				
20.00	1.42	0.73	0.06				
20.50	1.43	0.74	0.05				
21.00	1.43	0.75	0.05				
21.50	1.44	0.75	0.05				
22.00	1.45	0.76	0.05				
22.50	1.46	0.77	0.04				
23.00	1.47	0.77	0.04				
23.50	1.47	0.78	0.04				
24.00	**1.48**	**0.78**	0.04				
24.50	1.48	0.78	0.00				
25.00	1.48	0.78	0.00				
25.50	1.48	0.78	0.00				
26.00	1.48	0.78	0.00				

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.39 ac, 64.01% Impervious, Inflow Depth = 0.78" for CPV.sand event
Inflow = 3.23 cfs @ 12.08 hrs, Volume= 0.221 af
Outflow = 0.11 cfs @ 16.07 hrs, Volume= 0.221 af, Atten= 97%, Lag= 239.5 min
Primary = 0.11 cfs @ 16.07 hrs, Volume= 0.221 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 126.10' @ 16.07 hrs Surf.Area= 6,773 sf Storage= 5,802 cf

Plug-Flow detention time= 567.4 min calculated for 0.221 af (100% of inflow)
Center-of-Mass det. time= 567.4 min (1,395.5 - 828.0)

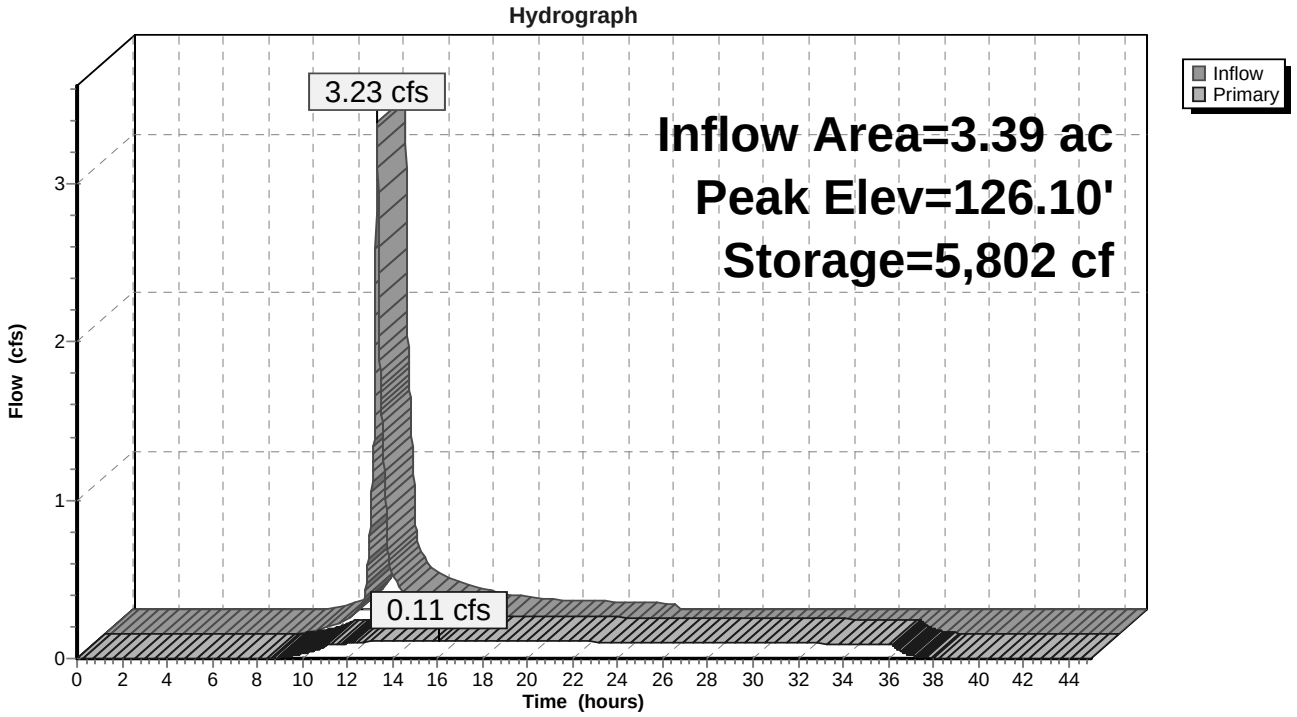
Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.87'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=0.11 cfs @ 16.07 hrs HW=126.10' (Free Discharge)
└**1=Culvert** (Passes 0.11 cfs of 12.50 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.11 cfs @ 9.86 fps)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 210P: Sand Filter mc3500



Hydrograph for Pond 210P: Sand Filter mc3500

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	124.70	0.00	26.50	0.00	3,555	125.71	0.10
0.50	0.00	0	124.70	0.00	27.00	0.00	3,371	125.68	0.10
1.00	0.00	0	124.70	0.00	27.50	0.00	3,188	125.65	0.10
1.50	0.00	0	124.70	0.00	28.00	0.00	3,005	125.62	0.10
2.00	0.00	0	124.70	0.00	28.50	0.00	2,824	125.59	0.10
2.50	0.00	0	124.70	0.00	29.00	0.00	2,643	125.55	0.10
3.00	0.00	0	124.70	0.00	29.50	0.00	2,463	125.52	0.10
3.50	0.00	0	124.70	0.00	30.00	0.00	2,283	125.49	0.10
4.00	0.00	0	124.70	0.00	30.50	0.00	2,105	125.46	0.10
4.50	0.00	0	124.70	0.00	31.00	0.00	1,927	125.41	0.10
5.00	0.00	0	124.70	0.00	31.50	0.00	1,751	125.35	0.10
5.50	0.00	0	124.70	0.00	32.00	0.00	1,577	125.28	0.10
6.00	0.00	0	124.70	0.00	32.50	0.00	1,404	125.22	0.10
6.50	0.00	0	124.70	0.00	33.00	0.00	1,233	125.16	0.09
7.00	0.00	0	124.70	0.00	33.50	0.00	1,064	125.09	0.09
7.50	0.00	0	124.70	0.00	34.00	0.00	896	125.03	0.09
8.00	0.00	0	124.70	0.00	34.50	0.00	730	124.97	0.09
8.50	0.00	2	124.70	0.00	35.00	0.00	565	124.91	0.09
9.00	0.02	13	124.70	0.01	35.50	0.00	402	124.85	0.09
9.50	0.03	33	124.71	0.02	36.00	0.00	241	124.79	0.09
10.00	0.05	61	124.72	0.03	36.50	0.00	104	124.74	0.05
10.50	0.08	101	124.74	0.05	37.00	0.00	43	124.72	0.02
11.00	0.12	160	124.76	0.08	37.50	0.00	18	124.71	0.01
11.50	0.23	299	124.81	0.09	38.00	0.00	7	124.70	0.00
12.00	**2.01**	1,432	125.23	0.10	38.50	0.00	3	124.70	0.00
12.50	**0.70**	4,384	125.86	0.10	39.00	0.00	1	124.70	0.00
13.00	0.31	4,943	125.95	0.11	39.50	0.00	1	124.70	0.00
13.50	0.25	5,240	126.01	0.11	40.00	0.00	0	124.70	0.00
14.00	0.20	5,454	126.04	0.11	40.50	0.00	0	124.70	0.00
14.50	0.18	5,602	126.07	0.11	41.00	0.00	0	124.70	0.00
15.00	0.16	5,709	126.09	0.11	41.50	0.00	0	124.70	0.00
15.50	0.13	5,776	126.10	0.11	42.00	0.00	0	124.70	0.00
16.00	0.11	**5,802**	**126.10**	**0.11**	42.50	0.00	0	124.70	0.00
16.50	0.10	**5,795**	**126.10**	**0.11**	43.00	0.00	0	124.70	0.00
17.00	0.09	5,770	126.10	0.11	43.50	0.00	0	124.70	0.00
17.50	0.08	5,727	126.09	0.11	44.00	0.00	0	124.70	0.00
18.00	0.07	5,665	126.08	0.11	44.50	0.00	0	124.70	0.00
18.50	0.06	5,591	126.07	0.11	45.00	0.00	0	124.70	0.00
19.00	0.06	5,511	126.05	0.11					
19.50	0.06	5,426	126.04	0.11					
20.00	0.06	5,336	126.02	0.11					
20.50	0.05	5,242	126.01	0.11					
21.00	0.05	5,143	125.99	0.11					
21.50	0.05	5,041	125.97	0.11					
22.00	0.05	4,936	125.95	0.11					
22.50	0.04	4,826	125.93	0.11					
23.00	0.04	4,713	125.91	0.11					
23.50	0.04	4,596	125.89	0.10					
24.00	0.04	4,476	125.87	0.10					
24.50	0.00	4,298	125.84	0.10					
25.00	0.00	4,111	125.81	0.10					
25.50	0.00	3,925	125.78	0.10					
26.00	0.00	3,739	125.74	0.10					

Summary for Subcatchment 21: Sub 21

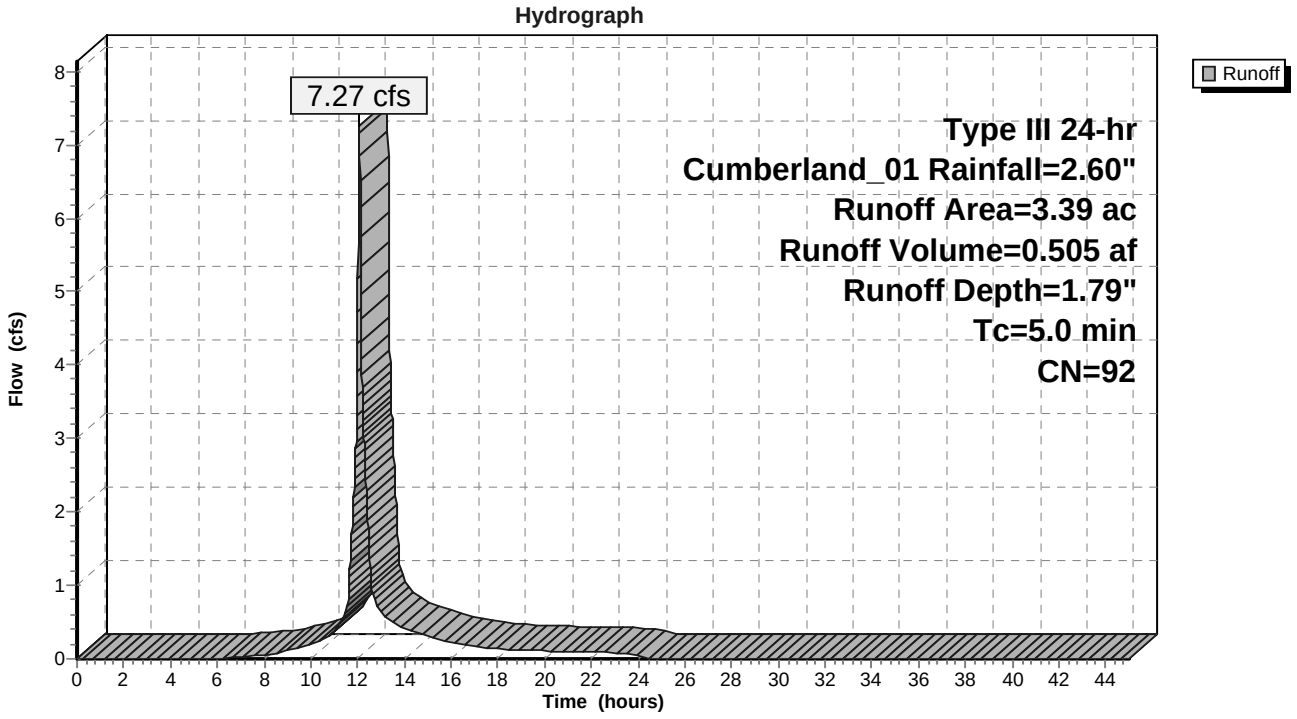
Runoff = 7.27 cfs @ 12.07 hrs, Volume= 0.505 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_01 Rainfall=2.60"

	Area (ac)	CN	Description
	1.22	80	>75% Grass cover, Good, HSG D
*	2.17	98	Site Development
	3.39	92	Weighted Average
	1.22		35.99% Pervious Area
	2.17		64.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 21: Sub 21



Hydrograph for Subcatchment 21: Sub 21

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	2.60	1.79	0.00
0.50	0.01	0.00	0.00	27.00	2.60	1.79	0.00
1.00	0.03	0.00	0.00	27.50	2.60	1.79	0.00
1.50	0.04	0.00	0.00	28.00	2.60	1.79	0.00
2.00	0.05	0.00	0.00	28.50	2.60	1.79	0.00
2.50	0.07	0.00	0.00	29.00	2.60	1.79	0.00
3.00	0.08	0.00	0.00	29.50	2.60	1.79	0.00
3.50	0.10	0.00	0.00	30.00	2.60	1.79	0.00
4.00	0.11	0.00	0.00	30.50	2.60	1.79	0.00
4.50	0.13	0.00	0.00	31.00	2.60	1.79	0.00
5.00	0.15	0.00	0.00	31.50	2.60	1.79	0.00
5.50	0.17	0.00	0.00	32.00	2.60	1.79	0.00
6.00	0.19	0.00	0.00	32.50	2.60	1.79	0.00
6.50	0.21	0.00	0.01	33.00	2.60	1.79	0.00
7.00	0.24	0.00	0.02	33.50	2.60	1.79	0.00
7.50	0.26	0.01	0.04	34.00	2.60	1.79	0.00
8.00	0.30	0.02	0.05	34.50	2.60	1.79	0.00
8.50	0.33	0.02	0.08	35.00	2.60	1.79	0.00
9.00	0.38	0.04	0.11	35.50	2.60	1.79	0.00
9.50	0.43	0.06	0.15	36.00	2.60	1.79	0.00
10.00	0.49	0.08	0.19	36.50	2.60	1.79	0.00
10.50	0.56	0.12	0.27	37.00	2.60	1.79	0.00
11.00	0.65	0.17	0.36	37.50	2.60	1.79	0.00
11.50	0.77	0.25	0.64	38.00	2.60	1.79	0.00
12.00	1.30	0.64	**4.71**	38.50	2.60	1.79	0.00
12.50	1.83	1.08	**1.46**	39.00	2.60	1.79	0.00
13.00	1.95	1.19	0.63	39.50	2.60	1.79	0.00
13.50	2.04	1.27	0.50	40.00	2.60	1.79	0.00
14.00	2.11	1.33	0.41	40.50	2.60	1.79	0.00
14.50	2.17	1.39	0.36	41.00	2.60	1.79	0.00
15.00	2.22	1.44	0.31	41.50	2.60	1.79	0.00
15.50	2.27	1.48	0.26	42.00	2.60	1.79	0.00
16.00	2.30	1.51	0.22	42.50	2.60	1.79	0.00
16.50	2.34	1.54	0.19	43.00	2.60	1.79	0.00
17.00	2.36	1.57	0.17	43.50	2.60	1.79	0.00
17.50	2.39	1.59	0.15	44.00	2.60	1.79	0.00
18.00	2.41	1.61	0.13	44.50	2.60	1.79	0.00
18.50	2.43	1.63	0.13	45.00	2.60	1.79	0.00
19.00	2.45	1.65	0.12				
19.50	2.47	1.67	0.11				
20.00	2.49	1.68	0.11				
20.50	2.50	1.70	0.10				
21.00	2.52	1.71	0.10				
21.50	2.54	1.73	0.09				
22.00	2.55	1.74	0.09				
22.50	2.56	1.75	0.08				
23.00	2.58	1.76	0.08				
23.50	2.59	1.78	0.08				
24.00	**2.60**	**1.79**	0.07				
24.50	2.60	1.79	0.00				
25.00	2.60	1.79	0.00				
25.50	2.60	1.79	0.00				
26.00	2.60	1.79	0.00				

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.39 ac, 64.01% Impervious, Inflow Depth = 1.79" for Cumberland_01 event
Inflow = 7.27 cfs @ 12.07 hrs, Volume= 0.505 af
Outflow = 0.77 cfs @ 12.81 hrs, Volume= 0.471 af, Atten= 89%, Lag= 44.4 min
Primary = 0.77 cfs @ 12.81 hrs, Volume= 0.471 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 127.14' @ 12.81 hrs Surf.Area= 6,773 sf Storage= 11,516 cf

Plug-Flow detention time= 599.0 min calculated for 0.471 af (93% of inflow)
Center-of-Mass det. time= 563.5 min (1,368.0 - 804.5)

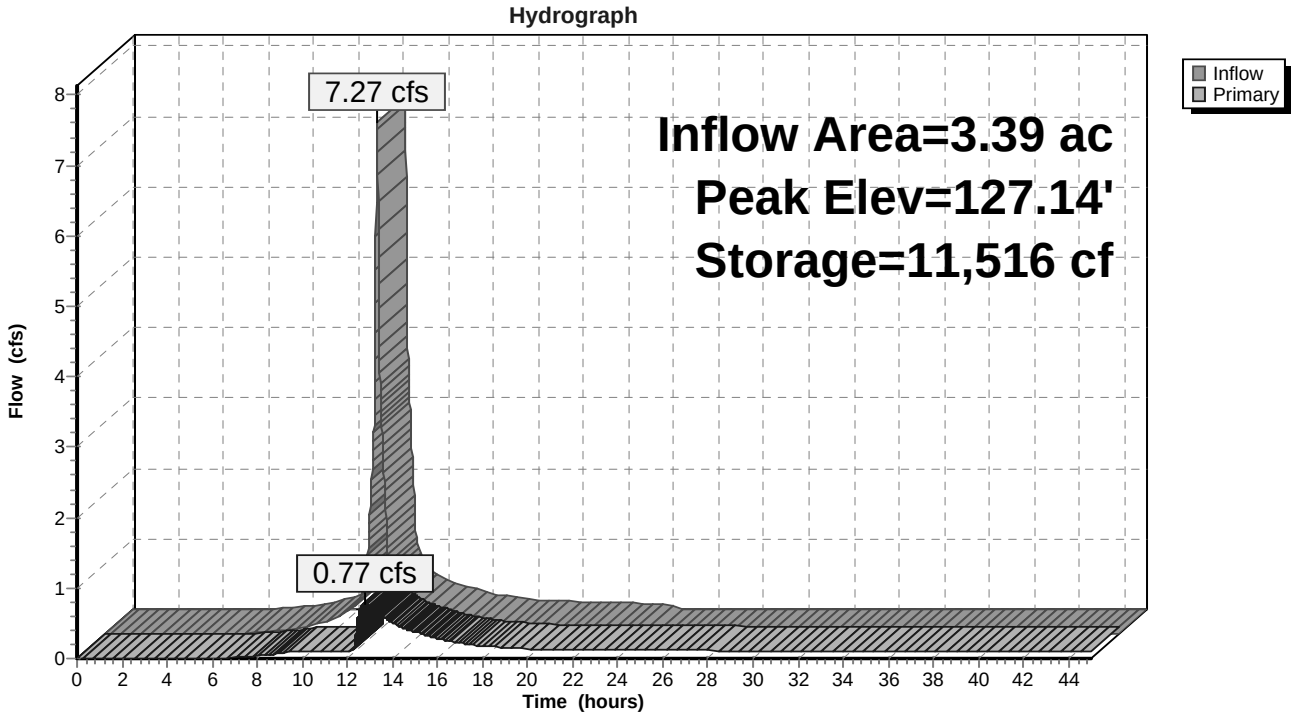
Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.87'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=0.77 cfs @ 12.81 hrs HW=127.14' (Free Discharge)
└**1=Culvert** (Passes 0.77 cfs of 13.88 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 11.01 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.65 cfs @ 1.99 fps)
  └**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 210P: Sand Filter mc3500



Hydrograph for Pond 210P: Sand Filter mc3500

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	124.70	0.00	26.50	0.00	8,491	126.58	0.11
0.50	0.00	0	124.70	0.00	27.00	0.00	8,287	126.55	0.11
1.00	0.00	0	124.70	0.00	27.50	0.00	8,084	126.51	0.11
1.50	0.00	0	124.70	0.00	28.00	0.00	7,881	126.47	0.11
2.00	0.00	0	124.70	0.00	28.50	0.00	7,680	126.44	0.11
2.50	0.00	0	124.70	0.00	29.00	0.00	7,479	126.40	0.11
3.00	0.00	0	124.70	0.00	29.50	0.00	7,279	126.37	0.11
3.50	0.00	0	124.70	0.00	30.00	0.00	7,080	126.33	0.11
4.00	0.00	0	124.70	0.00	30.50	0.00	6,882	126.29	0.11
4.50	0.00	0	124.70	0.00	31.00	0.00	6,684	126.26	0.11
5.00	0.00	0	124.70	0.00	31.50	0.00	6,487	126.22	0.11
5.50	0.00	0	124.70	0.00	32.00	0.00	6,292	126.19	0.11
6.00	0.00	1	124.70	0.00	32.50	0.00	6,096	126.16	0.11
6.50	0.01	10	124.70	0.00	33.00	0.00	5,902	126.12	0.11
7.00	0.02	24	124.71	0.01	33.50	0.00	5,708	126.09	0.11
7.50	0.04	45	124.72	0.02	34.00	0.00	5,516	126.05	0.11
8.00	0.05	71	124.73	0.03	34.50	0.00	5,324	126.02	0.11
8.50	0.08	106	124.74	0.05	35.00	0.00	5,132	125.99	0.11
9.00	0.11	157	124.76	0.08	35.50	0.00	4,942	125.95	0.11
9.50	0.15	233	124.79	0.09	36.00	0.00	4,752	125.92	0.11
10.00	0.19	380	124.84	0.09	36.50	0.00	4,563	125.89	0.10
10.50	0.27	630	124.93	0.09	37.00	0.00	4,375	125.85	0.10
11.00	0.36	1,031	125.08	0.09	37.50	0.00	4,188	125.82	0.10
11.50	0.64	1,729	125.34	0.10	38.00	0.00	4,001	125.79	0.10
12.00	**4.71**	4,818	125.93	0.11	38.50	0.00	3,816	125.76	0.10
12.50	**1.46**	**11,271**	**127.09**	**0.62**	39.00	0.00	3,631	125.73	0.10
13.00	0.63	**11,477**	**127.13**	**0.74**	39.50	0.00	3,446	125.69	0.10
13.50	0.50	11,255	127.09	0.61	40.00	0.00	3,263	125.66	0.10
14.00	0.41	11,063	127.06	0.51	40.50	0.00	3,080	125.63	0.10
14.50	0.36	10,905	127.03	0.43	41.00	0.00	2,898	125.60	0.10
15.00	0.31	10,779	127.00	0.38	41.50	0.00	2,717	125.57	0.10
15.50	0.26	10,665	126.98	0.33	42.00	0.00	2,537	125.54	0.10
16.00	0.22	10,554	126.96	0.28	42.50	0.00	2,357	125.51	0.10
16.50	0.19	10,449	126.94	0.25	43.00	0.00	2,178	125.48	0.10
17.00	0.17	10,360	126.92	0.22	43.50	0.00	2,000	125.44	0.10
17.50	0.15	10,279	126.91	0.20	44.00	0.00	1,823	125.37	0.10
18.00	0.13	10,202	126.90	0.18	44.50	0.00	1,648	125.31	0.10
18.50	0.13	10,128	126.88	0.16	45.00	0.00	1,475	125.24	0.10
19.00	0.12	10,067	126.87	0.15					
19.50	0.11	10,015	126.86	0.14					
20.00	0.11	9,963	126.85	0.14					
20.50	0.10	9,914	126.84	0.13					
21.00	0.10	9,867	126.83	0.12					
21.50	0.09	9,818	126.82	0.12					
22.00	0.09	9,765	126.81	0.12					
22.50	0.08	9,709	126.80	0.12					
23.00	0.08	9,648	126.79	0.12					
23.50	0.08	9,579	126.78	0.12					
24.00	0.07	9,503	126.77	0.12					
24.50	0.00	9,314	126.73	0.12					
25.00	0.00	9,107	126.69	0.11					
25.50	0.00	8,901	126.66	0.11					
26.00	0.00	8,695	126.62	0.11					

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 1A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	14432 - Portland Retirement Residence		
SHEET NO.	1	OF	1
CALCULATED BY	PDO	DATE	8/7/2015
FILE NAME		PRNT DATE	11/20/2015

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 #1

Landscaped Area	18,514.00	SF				
Impervious Area	19,526.00	SF				
Minimum Surface Area						
Required	(2% X Landscaped + 5%" X Impervious)					
Total Landscaped Area	18,514.00	SF	Area	370.3	SF	
Total Impervious Area	19,526.00	SF	Area	976.3	SF	
Required Minimum Surface Area				1,346.6	SF	
Provided Surface Area				2,326.0	SF	

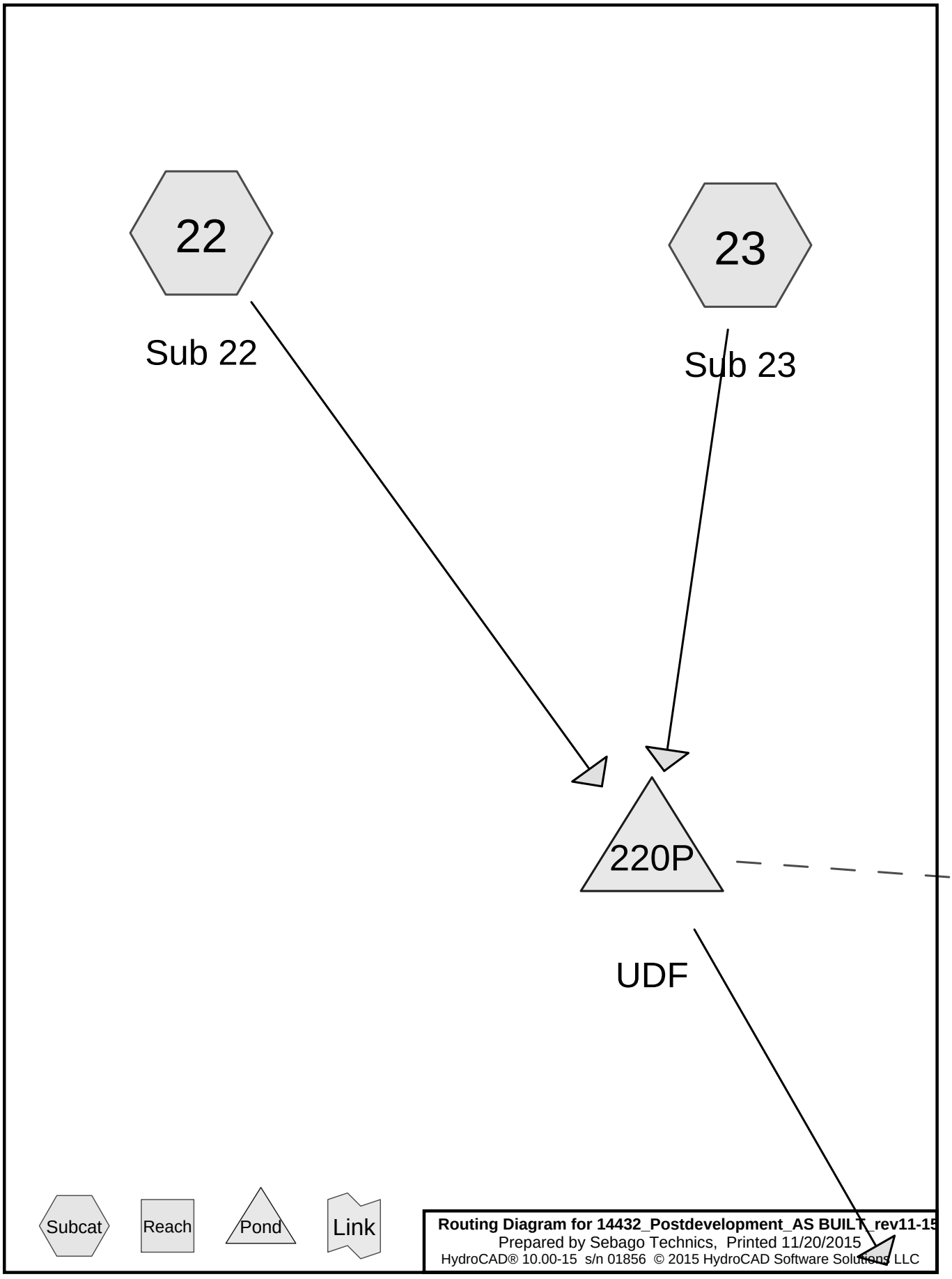
Channel Protection Volume (CPV)

Required	(0.4" X Landscaped + 1.0" X Impervious)							
Landscaped Area	18,514.00	SF	Volume	617.1				
Impervious Area	19,526.00	SF	Volume	1,627.2				
CPV Required				2,244.3	CF	0.052	AF	
Provided CPV				2,900.0	CF	(Elevation 125.00 to 126.00)		

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:	19,526.00	SF					
Sediment Volume	22	CF					
Provided	52	CF	6	Inch Deep Forebay	with area of	104	sf


22
23
Sub 22
Sub 23
220P
UDF
Subcat
Reach
Pond
Link
Routing Diagram for 14432_Postdevelopment_AS BUILT_rev11-15
Prepared by Sebago Technics, Printed 11/20/2015
HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 22: Sub 22

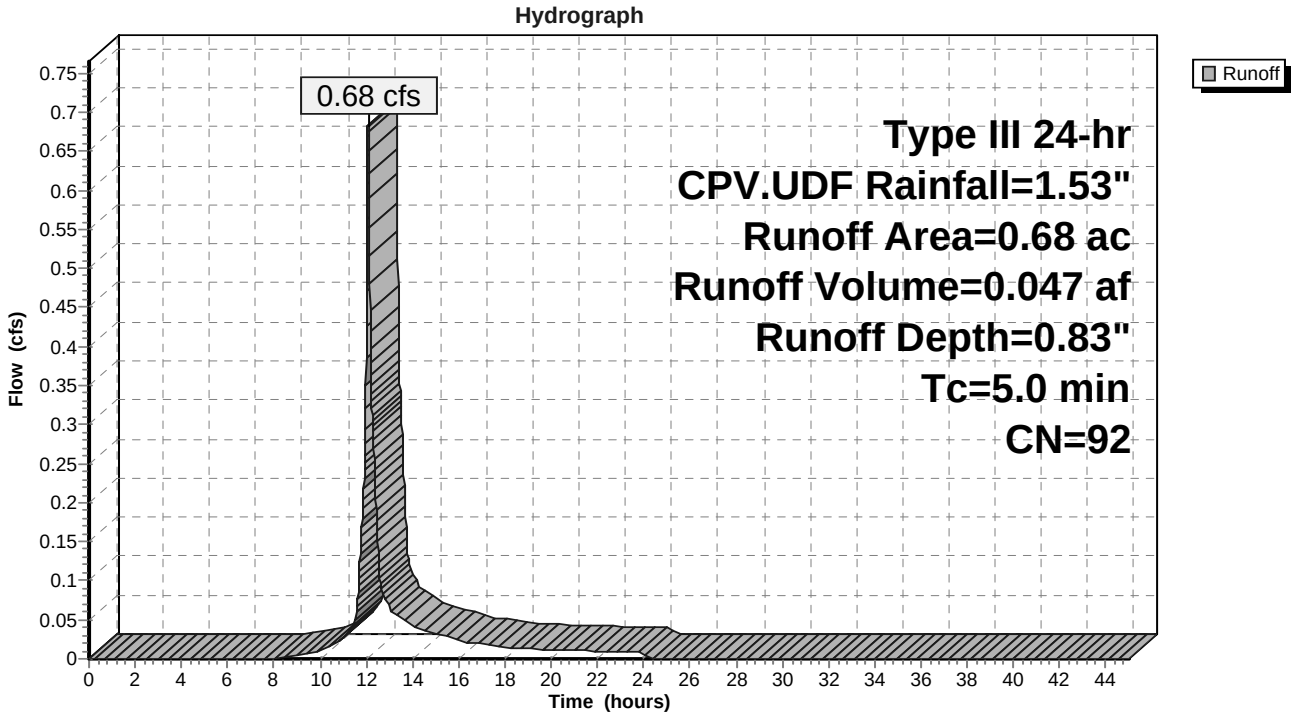
Runoff = 0.68 cfs @ 12.08 hrs, Volume= 0.047 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr CPV.UDF Rainfall=1.53"

	Area (ac)	CN	Description
*	0.45	98	Site Development
	0.23	80	>75% Grass cover, Good, HSG D
	0.68	92	Weighted Average
	0.23		33.82% Pervious Area
	0.45		66.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 22: Sub 22



Hydrograph for Subcatchment 22: Sub 22

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	1.53	0.83	0.00
0.50	0.01	0.00	0.00	27.00	1.53	0.83	0.00
1.00	0.02	0.00	0.00	27.50	1.53	0.83	0.00
1.50	0.02	0.00	0.00	28.00	1.53	0.83	0.00
2.00	0.03	0.00	0.00	28.50	1.53	0.83	0.00
2.50	0.04	0.00	0.00	29.00	1.53	0.83	0.00
3.00	0.05	0.00	0.00	29.50	1.53	0.83	0.00
3.50	0.06	0.00	0.00	30.00	1.53	0.83	0.00
4.00	0.07	0.00	0.00	30.50	1.53	0.83	0.00
4.50	0.08	0.00	0.00	31.00	1.53	0.83	0.00
5.00	0.09	0.00	0.00	31.50	1.53	0.83	0.00
5.50	0.10	0.00	0.00	32.00	1.53	0.83	0.00
6.00	0.11	0.00	0.00	32.50	1.53	0.83	0.00
6.50	0.12	0.00	0.00	33.00	1.53	0.83	0.00
7.00	0.14	0.00	0.00	33.50	1.53	0.83	0.00
7.50	0.16	0.00	0.00	34.00	1.53	0.83	0.00
8.00	0.17	0.00	0.00	34.50	1.53	0.83	0.00
8.50	0.20	0.00	0.00	35.00	1.53	0.83	0.00
9.00	0.22	0.00	0.00	35.50	1.53	0.83	0.00
9.50	0.25	0.01	0.01	36.00	1.53	0.83	0.00
10.00	0.29	0.01	0.01	36.50	1.53	0.83	0.00
10.50	0.33	0.02	0.02	37.00	1.53	0.83	0.00
11.00	0.38	0.04	0.03	37.50	1.53	0.83	0.00
11.50	0.46	0.07	0.05	38.00	1.53	0.83	0.00
12.00	0.76	0.24	**0.43**	38.50	1.53	0.83	0.00
12.50	1.07	0.46	**0.15**	39.00	1.53	0.83	0.00
13.00	1.15	0.51	0.07	39.50	1.53	0.83	0.00
13.50	1.20	0.55	0.05	40.00	1.53	0.83	0.00
14.00	1.24	0.59	0.04	40.50	1.53	0.83	0.00
14.50	1.28	0.62	0.04	41.00	1.53	0.83	0.00
15.00	1.31	0.64	0.03	41.50	1.53	0.83	0.00
15.50	1.33	0.66	0.03	42.00	1.53	0.83	0.00
16.00	1.36	0.68	0.02	42.50	1.53	0.83	0.00
16.50	1.37	0.70	0.02	43.00	1.53	0.83	0.00
17.00	1.39	0.71	0.02	43.50	1.53	0.83	0.00
17.50	1.41	0.72	0.02	44.00	1.53	0.83	0.00
18.00	1.42	0.73	0.01	44.50	1.53	0.83	0.00
18.50	1.43	0.74	0.01	45.00	1.53	0.83	0.00
19.00	1.44	0.75	0.01				
19.50	1.45	0.76	0.01				
20.00	1.46	0.77	0.01				
20.50	1.47	0.78	0.01				
21.00	1.48	0.79	0.01				
21.50	1.49	0.79	0.01				
22.00	1.50	0.80	0.01				
22.50	1.51	0.81	0.01				
23.00	1.52	0.81	0.01				
23.50	1.52	0.82	0.01				
24.00	**1.53**	**0.83**	0.01				
24.50	1.53	0.83	0.00				
25.00	1.53	0.83	0.00				
25.50	1.53	0.83	0.00				
26.00	1.53	0.83	0.00				

Summary for Subcatchment 23: Sub 23

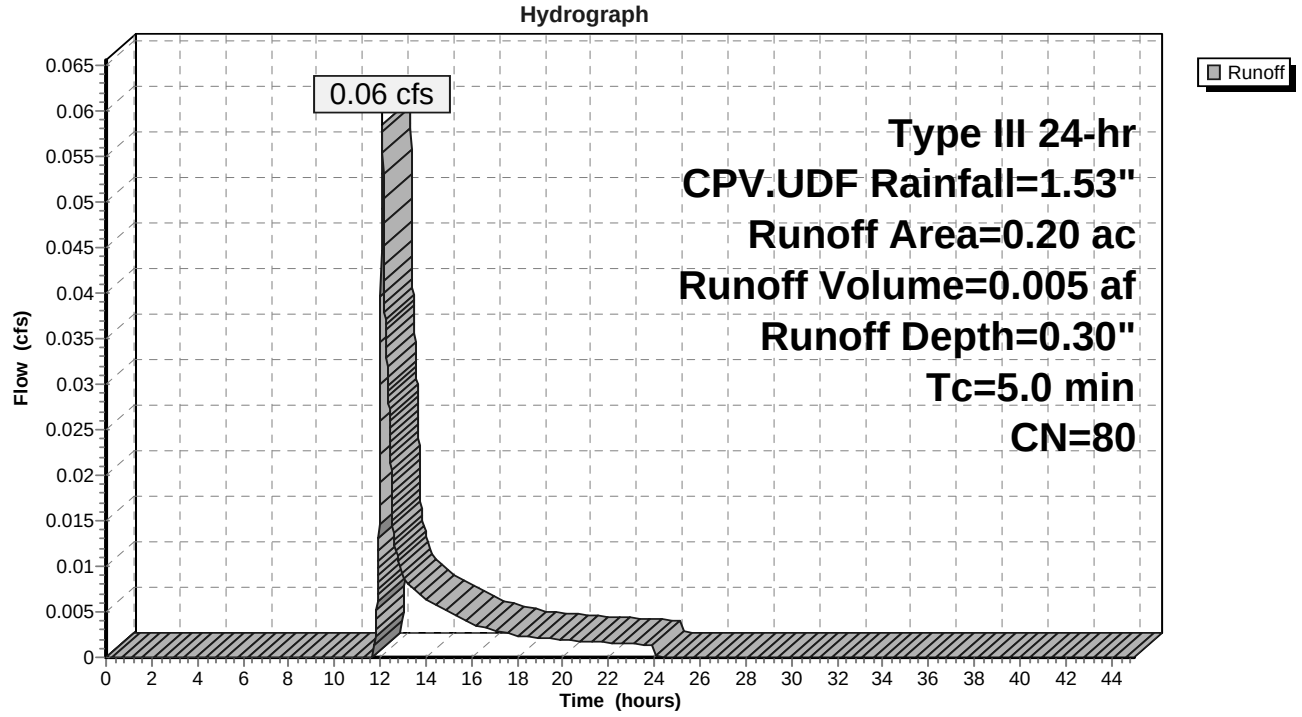
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr CPV.UDF Rainfall=1.53"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 23: Sub 23



Hydrograph for Subcatchment 23: Sub 23

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	26.50	1.53	0.30	0.00
0.50	0.01	0.00	0.00	27.00	1.53	0.30	0.00
1.00	0.02	0.00	0.00	27.50	1.53	0.30	0.00
1.50	0.02	0.00	0.00	28.00	1.53	0.30	0.00
2.00	0.03	0.00	0.00	28.50	1.53	0.30	0.00
2.50	0.04	0.00	0.00	29.00	1.53	0.30	0.00
3.00	0.05	0.00	0.00	29.50	1.53	0.30	0.00
3.50	0.06	0.00	0.00	30.00	1.53	0.30	0.00
4.00	0.07	0.00	0.00	30.50	1.53	0.30	0.00
4.50	0.08	0.00	0.00	31.00	1.53	0.30	0.00
5.00	0.09	0.00	0.00	31.50	1.53	0.30	0.00
5.50	0.10	0.00	0.00	32.00	1.53	0.30	0.00
6.00	0.11	0.00	0.00	32.50	1.53	0.30	0.00
6.50	0.12	0.00	0.00	33.00	1.53	0.30	0.00
7.00	0.14	0.00	0.00	33.50	1.53	0.30	0.00
7.50	0.16	0.00	0.00	34.00	1.53	0.30	0.00
8.00	0.17	0.00	0.00	34.50	1.53	0.30	0.00
8.50	0.20	0.00	0.00	35.00	1.53	0.30	0.00
9.00	0.22	0.00	0.00	35.50	1.53	0.30	0.00
9.50	0.25	0.00	0.00	36.00	1.53	0.30	0.00
10.00	0.29	0.00	0.00	36.50	1.53	0.30	0.00
10.50	0.33	0.00	0.00	37.00	1.53	0.30	0.00
11.00	0.38	0.00	0.00	37.50	1.53	0.30	0.00
11.50	0.46	0.00	0.00	38.00	1.53	0.30	0.00
12.00	0.76	0.03	**0.03**	38.50	1.53	0.30	0.00
12.50	1.07	0.11	**0.02**	39.00	1.53	0.30	0.00
13.00	1.15	0.13	0.01	39.50	1.53	0.30	0.00
13.50	1.20	0.15	0.01	40.00	1.53	0.30	0.00
14.00	1.24	0.17	0.01	40.50	1.53	0.30	0.00
14.50	1.28	0.18	0.01	41.00	1.53	0.30	0.00
15.00	1.31	0.20	0.01	41.50	1.53	0.30	0.00
15.50	1.33	0.21	0.00	42.00	1.53	0.30	0.00
16.00	1.36	0.22	0.00	42.50	1.53	0.30	0.00
16.50	1.37	0.23	0.00	43.00	1.53	0.30	0.00
17.00	1.39	0.23	0.00	43.50	1.53	0.30	0.00
17.50	1.41	0.24	0.00	44.00	1.53	0.30	0.00
18.00	1.42	0.25	0.00	44.50	1.53	0.30	0.00
18.50	1.43	0.25	0.00	45.00	1.53	0.30	0.00
19.00	1.44	0.26	0.00				
19.50	1.45	0.26	0.00				
20.00	1.46	0.27	0.00				
20.50	1.47	0.27	0.00				
21.00	1.48	0.28	0.00				
21.50	1.49	0.28	0.00				
22.00	1.50	0.29	0.00				
22.50	1.51	0.29	0.00				
23.00	1.52	0.29	0.00				
23.50	1.52	0.30	0.00				
24.00	**1.53**	**0.30**	0.00				
24.50	1.53	0.30	0.00				
25.00	1.53	0.30	0.00				
25.50	1.53	0.30	0.00				
26.00	1.53	0.30	0.00				

Summary for Pond 220P: UDF

Inflow Area = 0.88 ac, 51.14% Impervious, Inflow Depth = 0.71" for CPV.UDF event
Inflow = 0.74 cfs @ 12.08 hrs, Volume= 0.052 af
Outflow = 0.03 cfs @ 15.31 hrs, Volume= 0.052 af, Atten= 95%, Lag= 193.9 min
Primary = 0.03 cfs @ 15.31 hrs, Volume= 0.052 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 125.48' @ 15.31 hrs Surf.Area= 2,639 sf Storage= 1,199 cf

Plug-Flow detention time= 369.2 min calculated for 0.052 af (100% of inflow)
Center-of-Mass det. time= 369.2 min (1,202.0 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

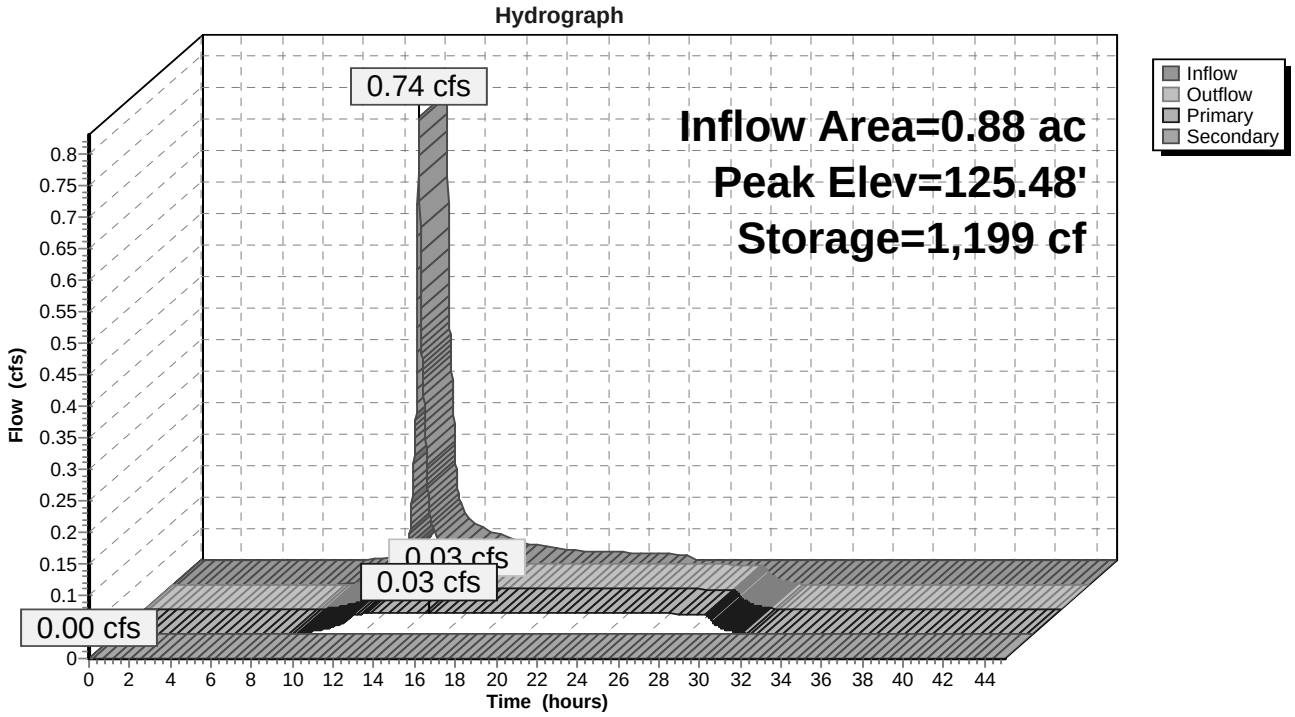
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**2.0" Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 1	127.00'	**20.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.03 cfs @ 15.31 hrs HW=125.48' (Free Discharge)
└**1=Culvert** (Passes 0.03 cfs of 4.94 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 7.79 fps)
    └**3=Exfiltration** (Passes 0.03 cfs of 0.15 cfs potential flow)
  └**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 220P: UDF



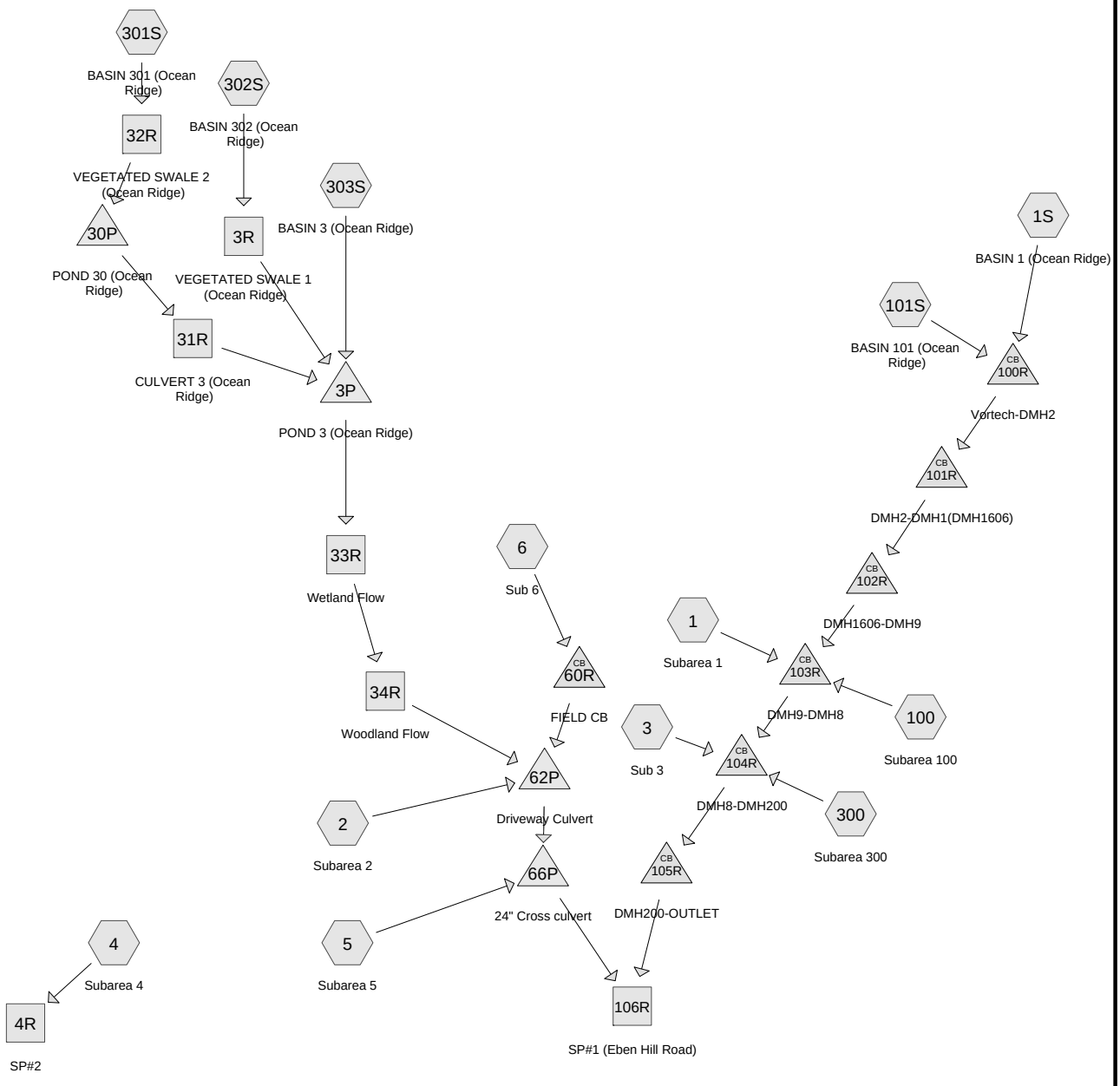
Hydrograph for Pond 220P: UDF

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	125.00	0.00	0.00	**0.00**
1.00	0.00	0	125.00	0.00	0.00	0.00
2.00	0.00	0	125.00	0.00	0.00	0.00
3.00	0.00	0	125.00	0.00	0.00	0.00
4.00	0.00	0	125.00	0.00	0.00	0.00
5.00	0.00	0	125.00	0.00	0.00	0.00
6.00	0.00	0	125.00	0.00	0.00	0.00
7.00	0.00	0	125.00	0.00	0.00	0.00
8.00	0.00	0	125.00	0.00	0.00	0.00
9.00	0.00	4	125.00	0.00	0.00	0.00
10.00	0.01	15	125.01	0.01	0.01	0.00
11.00	0.03	37	125.02	0.02	0.02	0.00
12.00	**0.45**	291	125.12	0.03	0.03	0.00
13.00	**0.07**	1,076	125.44	0.03	0.03	0.00
14.00	0.05	1,167	125.47	0.03	0.03	0.00
15.00	0.04	**1,198**	**125.48**	**0.03**	**0.03**	0.00
16.00	0.03	**1,190**	**125.48**	**0.03**	**0.03**	0.00
17.00	0.02	1,153	125.47	0.03	0.03	0.00
18.00	0.02	1,098	125.44	0.03	0.03	0.00
19.00	0.01	1,032	125.42	0.03	0.03	0.00
20.00	0.01	961	125.39	0.03	0.03	0.00
21.00	0.01	886	125.36	0.03	0.03	0.00
22.00	0.01	808	125.33	0.03	0.03	0.00
23.00	0.01	726	125.30	0.03	0.03	0.00
24.00	0.01	642	125.27	0.03	0.03	0.00
25.00	0.00	526	125.22	0.03	0.03	0.00
26.00	0.00	409	125.17	0.03	0.03	0.00
27.00	0.00	294	125.12	0.03	0.03	0.00
28.00	0.00	179	125.08	0.03	0.03	0.00
29.00	0.00	66	125.03	0.03	0.03	0.00
30.00	0.00	13	125.01	0.01	0.01	0.00
31.00	0.00	3	125.00	0.00	0.00	0.00
32.00	0.00	1	125.00	0.00	0.00	0.00
33.00	0.00	0	125.00	0.00	0.00	0.00
34.00	0.00	0	125.00	0.00	0.00	0.00
35.00	0.00	0	125.00	0.00	0.00	0.00
36.00	0.00	0	125.00	0.00	0.00	0.00
37.00	0.00	0	125.00	0.00	0.00	0.00
38.00	0.00	0	125.00	0.00	0.00	0.00
39.00	0.00	0	125.00	0.00	0.00	0.00
40.00	0.00	0	125.00	0.00	0.00	0.00
41.00	0.00	0	125.00	0.00	0.00	0.00
42.00	0.00	0	125.00	0.00	0.00	0.00
43.00	0.00	0	125.00	0.00	0.00	0.00
44.00	0.00	0	125.00	0.00	0.00	0.00
45.00	0.00	0	125.00	0.00	0.00	0.00

Attachment B

HydroCAD Output- Pre-Development/Post Development TR-20 Model

Pre-Development



Routing Diagram for 14432_Predevelopment_ASBUIILT
Prepared by Sebago Technics, Printed 11/20/2015
HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.630	84	1 acre lots, 20% imp, HSG D (1, 3, 5, 6)
1.000	87	1/4 acre lots, 38% imp, HSG D (1, 2, 6)
0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge) (1)
0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge (2)
0.070	98	Building, Ocean Ridge (1, 2)
2.240	98	IMPERVIOUS (1S, 101S, 301S, 302S, 303S)
2.710	80	LAWN D (1S, 101S, 301S, 302S, 303S)
0.040	98	Paved roads Ocean Ave (3)
0.050	98	Road, Ocean Ridge (2)
0.610	98	Roadway (1, 2, 5, 100, 300)
0.510	77	WOODS D (1S, 302S, 303S)
15.100	77	Woods, Good, HSG D (1, 2, 4, 5)
0.030	77	Woods, Good, HSG D, Ocean Ridge (2)
24.220	**81**	**TOTAL AREA**

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1 Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=1.33"
Flow Length=660' Tc=9.5 min CN=80 Runoff=4.29 cfs 0.349 af

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=1.75"
Flow Length=660' Tc=9.9 min CN=86 Runoff=4.67 cfs 0.379 af

Subcatchment 2: Subarea 2 Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=1.20"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=8.62 cfs 1.155 af

Subcatchment 3: Sub 3 Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=1.75"
Flow Length=300' Tc=9.4 min CN=86 Runoff=0.55 cfs 0.044 af

Subcatchment 4: Subarea 4 Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=1.14"
Flow Length=250' Tc=9.8 min CN=77 Runoff=1.37 cfs 0.115 af

Subcatchment 5: Subarea 5 Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=1.33"
Flow Length=660' Tc=11.0 min CN=80 Runoff=2.36 cfs 0.201 af

Subcatchment 6: Sub 6 Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=1.60"
Flow Length=235' Tc=5.0 min CN=84 Runoff=0.82 cfs 0.056 af

Subcatchment 100: Subarea 100 Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=572' Tc=6.6 min CN=98 Runoff=0.65 cfs 0.053 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=2.08"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.45 cfs 0.033 af

Subcatchment 300: Subarea 300 Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=1.91"
Flow Length=190' Tc=9.3 min CN=88 Runoff=1.63 cfs 0.130 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=2.08"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=2.76 cfs 0.220 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=1.53"
Flow Length=150' Tc=8.1 min CN=83 Runoff=0.96 cfs 0.074 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.53' Max Vel=0.62 fps Inflow=2.76 cfs 0.220 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=2.49 cfs 0.220 af

Reach 4R: SP#2 Inflow=1.37 cfs 0.115 af
Outflow=1.37 cfs 0.115 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.40' Max Vel=4.38 fps Inflow=1.22 cfs 0.130 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=1.22 cfs 0.130 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.39' Max Vel=0.54 fps Inflow=1.63 cfs 0.130 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=1.53 cfs 0.130 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.15' Max Vel=0.61 fps Inflow=1.24 cfs 0.424 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=1.24 cfs 0.424 af

Reach 34R: Woodland Flow Avg. Flow Depth=0.10' Max Vel=2.01 fps Inflow=1.24 cfs 0.424 af
n=0.035 L=1,180.0' S=0.0581 '/' Capacity=108.87 cfs Outflow=1.23 cfs 0.424 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=17.13 cfs 2.714 af
Outflow=17.13 cfs 2.714 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=159.97' Storage=6,326 cf Inflow=4.17 cfs 0.424 af
Outflow=1.24 cfs 0.424 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.52' Storage=815 cf Inflow=1.53 cfs 0.130 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=1.22 cfs 0.130 af

Pond 60R: FIELD CB Peak Elev=90.46' Inflow=0.82 cfs 0.056 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=0.82 cfs 0.056 af

Pond 62P: Driveway Culvert Peak Elev=89.59' Storage=987 cf Inflow=9.37 cfs 1.634 af
Primary=7.78 cfs 1.604 af Secondary=1.57 cfs 0.030 af Outflow=9.34 cfs 1.634 af

Pond 66P: 24" Cross culvert Peak Elev=86.27' Storage=82 cf Inflow=10.31 cfs 1.835 af
Primary=10.31 cfs 1.835 af Secondary=0.00 cfs 0.000 af Outflow=10.31 cfs 1.835 af

Pond 100R: Vortech-DMH2 Peak Elev=108.12' Inflow=5.07 cfs 0.412 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=5.07 cfs 0.412 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=99.50' Inflow=5.07 cfs 0.412 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=5.07 cfs 0.412 af

Pond 102R: DMH1606-DMH9 Peak Elev=92.42' Inflow=5.07 cfs 0.412 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=5.07 cfs 0.412 af

Pond 103R: DMH9-DMH8 Peak Elev=91.19' Inflow=9.94 cfs 0.813 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=9.94 cfs 0.813 af

Pond 104R: DMH8-DMH200 Peak Elev=91.38' Inflow=10.70 cfs 0.879 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=10.70 cfs 0.879 af

Pond 105R: DMH200-OUTLET Peak Elev=88.86' Inflow=10.70 cfs 0.879 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=10.70 cfs 0.879 af

Total Runoff Area = 24.220 ac Runoff Volume = 2.829 af Average Runoff Depth = 1.40"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 4.29 cfs @ 12.14 hrs, Volume= 0.349 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.290	84	1 acre lots, 20% imp, HSG D
	0.290	87	1/4 acre lots, 38% imp, HSG D
*	0.220	98	Roadway
	2.240	77	Woods, Good, HSG D
*	0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
*	0.030	98	Building, Ocean Ridge
	3.160	80	Weighted Average
	2.742		86.77% Pervious Area
	0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		**Shallow Concentrated Flow, Shallow Rd Ditch**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 4.67 cfs @ 12.14 hrs, Volume= 0.379 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.900	98	IMPERVIOUS
*	0.380	77	WOODS D
*	1.320	80	LAWN D
	2.600	86	Weighted Average
	1.700		65.38% Pervious Area
	0.900		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW**
					Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch**
					Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00'
					n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch**
					Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00'
					n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch**
					Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60'
					n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 8.62 cfs @ 12.46 hrs, Volume= 1.155 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.640	87	1/4 acre lots, 38% imp, HSG D
*	0.050	98	Roadway
	10.590	77	Woods, Good, HSG D
*	0.040	98	Building, Ocean Ridge
*	0.050	98	Road, Ocean Ridge
*	0.030	77	Woods, Good, HSG D, Ocean Ridge
*	0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
	11.540	78	Weighted Average
	11.157		96.68% Pervious Area
	0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.55 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.040	98	Paved roads Ocean Ave
	0.260	84	1 acre lots, 20% imp, HSG D
	0.300	86	Weighted Average
	0.208		69.33% Pervious Area
	0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 2.36 cfs @ 12.16 hrs, Volume= 0.201 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.730	84	1 acre lots, 20% imp, HSG D
*	0.030	98	Roadway
	1.060	77	Woods, Good, HSG D
	1.820	80	Weighted Average
	1.644		90.33% Pervious Area
	0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035 Earth, dense weeds
0.9					**Direct Entry,**
5.0	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.220	98	Roadway
	0.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.110	98	IMPERVIOUS
*	0.080	80	LAWN D
	0.190	90	Weighted Average
	0.080		42.11% Pervious Area
	0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn**
					Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway**
					Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope**
					Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.090	98	Roadway
	0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow**
					Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.370	98	IMPERVIOUS
*	0.450	80	LAWN D
	0.820	88	Weighted Average
	0.450		54.88% Pervious Area
	0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD**
					Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.740	98	IMPERVIOUS
*	0.050	77	WOODS D
*	0.480	80	LAWN D
	1.270	90	Weighted Average
	0.530		41.73% Pervious Area
	0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC**
					Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:**
					Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 0.96 cfs @ 12.12 hrs, Volume= 0.074 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.120	98	IMPERVIOUS
*	0.080	77	WOODS D
*	0.380	80	LAWN D
	0.580	83	Weighted Average
	0.460		79.31% Pervious Area
	0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 2.08" for Cumberland_02 event
Inflow = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af
Outflow = 2.49 cfs @ 12.25 hrs, Volume= 0.220 af, Atten= 10%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.62 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 17.1 min

Peak Storage= 685 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 1.14" for Cumberland_02 event
Inflow = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af
Outflow = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

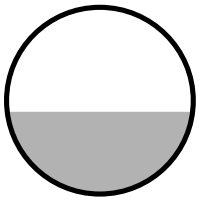
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af
Outflow = 1.22 cfs @ 12.33 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.38 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af
Outflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af, Atten= 6%, Lag= 5.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 12.7 min

Peak Storage= 325 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af
Outflow = 1.24 cfs @ 12.87 hrs, Volume= 0.424 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 14.9 min

Peak Storage= 303 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.87 hrs, Volume= 0.424 af
Outflow = 1.23 cfs @ 13.19 hrs, Volume= 0.424 af, Atten= 1%, Lag= 18.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.01 fps, Min. Travel Time= 9.8 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 30.6 min

Peak Storage= 722 cf @ 13.02 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 1,180.0' Slope= 0.0581 '/'
Inlet Invert= 157.50', Outlet Invert= 89.00'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 1.42" for Cumberland_02 event
Inflow = 17.13 cfs @ 12.15 hrs, Volume= 2.714 af
Outflow = 17.13 cfs @ 12.15 hrs, Volume= 2.714 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 4.17 cfs @ 12.26 hrs, Volume= 0.424 af
Outflow = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af, Atten= 70%, Lag= 29.7 min
Primary = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 159.97' @ 12.75 hrs Surf.Area= 4,273 sf Storage= 6,326 cf

Plug-Flow detention time= 81.6 min calculated for 0.424 af (100% of inflow)
Center-of-Mass det. time= 81.6 min (921.2 - 839.7)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=1.24 cfs @ 12.75 hrs HW=159.97' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.24 cfs @ 6.32 fps)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af
Outflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af, Atten= 20%, Lag= 5.7 min
Primary = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 160.52' @ 12.32 hrs Surf.Area= 1,371 sf Storage= 815 cf

Plug-Flow detention time= 33.6 min calculated for 0.130 af (100% of inflow)
Center-of-Mass det. time= 33.5 min (864.4 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500
			Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.22 cfs @ 12.32 hrs HW=160.52' (Free Discharge)
- **1=Culvert** (Barrel Controls 1.22 cfs @ 3.38 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 1.60" for Cumberland_02 event
Inflow = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af
Outflow = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 90.46' @ 12.08 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.08 hrs HW=90.46' (Free Discharge)
1=Culvert (Inlet Controls 0.81 cfs @ 2.31 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 1.34" for Cumberland_02 event
Inflow = 9.37 cfs @ 12.49 hrs, Volume= 1.634 af
Outflow = 9.34 cfs @ 12.51 hrs, Volume= 1.634 af, Atten= 0%, Lag= 1.4 min
Primary = 7.78 cfs @ 12.51 hrs, Volume= 1.604 af
Secondary = 1.57 cfs @ 12.51 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 89.59' @ 12.51 hrs Surf.Area= 2,135 sf Storage= 987 cf

Plug-Flow detention time= 0.6 min calculated for 1.634 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (895.4 - 894.8)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=7.78 cfs @ 12.51 hrs HW=89.59' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.78 cfs @ 4.40 fps)

Secondary OutFlow Max=1.56 cfs @ 12.51 hrs HW=89.59' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.56 cfs @ 0.78 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 1.34" for Cumberland_02 event
Inflow = 10.31 cfs @ 12.49 hrs, Volume= 1.835 af
Outflow = 10.31 cfs @ 12.49 hrs, Volume= 1.835 af, Atten= 0%, Lag= 0.3 min
Primary = 10.31 cfs @ 12.49 hrs, Volume= 1.835 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 86.27' @ 12.49 hrs Surf.Area= 129 sf Storage= 82 cf

Plug-Flow detention time= 0.3 min calculated for 1.835 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (890.4 - 890.3)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=10.31 cfs @ 12.49 hrs HW=86.27' (Free Discharge)
└**1=Culvert** (Barrel Controls 10.31 cfs @ 4.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 108.12' @ 12.13 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=108.12' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 99.50' @ 12.13 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=99.50' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 92.42' @ 12.13 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=92.42' (Free Discharge)
1=Culvert (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 1.58" for Cumberland_02 event
Inflow = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af
Outflow = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af, Atten= 0%, Lag= 0.0 min
Primary = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 91.19' @ 12.13 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=9.93 cfs @ 12.13 hrs HW=91.18' (Free Discharge)
1=Culvert (Inlet Controls 9.93 cfs @ 5.62 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 1.61" for Cumberland_02 event
Inflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af
Outflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min
Primary = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 91.38' @ 12.13 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.70 cfs @ 12.13 hrs HW=91.37' (Free Discharge)
1=Culvert (Barrel Controls 10.70 cfs @ 6.05 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 1.61" for Cumberland_02 event
Inflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af
Outflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min
Primary = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 88.86' @ 12.13 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=10.70 cfs @ 12.13 hrs HW=88.86' (Free Discharge)
1=Culvert (Inlet Controls 10.70 cfs @ 6.05 fps)

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1 Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=2.55"
Flow Length=660' Tc=9.5 min CN=80 Runoff=8.38 cfs 0.671 af

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=3.10"
Flow Length=660' Tc=9.9 min CN=86 Runoff=8.20 cfs 0.671 af

Subcatchment 2: Subarea 2 Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=2.38"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=17.52 cfs 2.285 af

Subcatchment 3: Sub 3 Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=3.10"
Flow Length=300' Tc=9.4 min CN=86 Runoff=0.96 cfs 0.077 af

Subcatchment 4: Subarea 4 Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=2.29"
Flow Length=250' Tc=9.8 min CN=77 Runoff=2.85 cfs 0.231 af

Subcatchment 5: Subarea 5 Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=2.55"
Flow Length=660' Tc=11.0 min CN=80 Runoff=4.60 cfs 0.386 af

Subcatchment 6: Sub 6 Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=2.91"
Flow Length=235' Tc=5.0 min CN=84 Runoff=1.48 cfs 0.102 af

Subcatchment 100: Subarea 100 Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=572' Tc=6.6 min CN=98 Runoff=0.97 cfs 0.080 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=3.49"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.74 cfs 0.055 af

Subcatchment 300: Subarea 300 Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.42 cfs 0.033 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=3.29"
Flow Length=190' Tc=9.3 min CN=88 Runoff=2.78 cfs 0.225 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=3.49"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=4.55 cfs 0.370 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=2.81"
Flow Length=150' Tc=8.1 min CN=83 Runoff=1.78 cfs 0.136 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.71' Max Vel=0.73 fps Inflow=4.55 cfs 0.370 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=4.19 cfs 0.370 af

Reach 4R: SP#2 Inflow=2.85 cfs 0.231 af
Outflow=2.85 cfs 0.231 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.58' Max Vel=5.06 fps Inflow=2.22 cfs 0.225 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=2.22 cfs 0.225 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.54' Max Vel=0.65 fps Inflow=2.78 cfs 0.225 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=2.64 cfs 0.225 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.24' Max Vel=0.78 fps Inflow=2.79 cfs 0.730 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=2.78 cfs 0.730 af

Reach 34R: Woodland Flow Avg. Flow Depth=0.16' Max Vel=2.60 fps Inflow=2.78 cfs 0.730 af
n=0.035 L=1,180.0' S=0.0581 '/' Capacity=108.87 cfs Outflow=2.72 cfs 0.730 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=31.55 cfs 5.090 af
Outflow=31.55 cfs 5.090 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=160.74' Storage=10,521 cf Inflow=7.37 cfs 0.730 af
Outflow=2.79 cfs 0.730 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.73' Storage=1,151 cf Inflow=2.64 cfs 0.225 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=2.22 cfs 0.225 af

Pond 60R: FIELD CB Peak Elev=90.65' Inflow=1.48 cfs 0.102 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=1.48 cfs 0.102 af

Pond 62P: Driveway Culvert Peak Elev=89.82' Storage=1,577 cf Inflow=18.92 cfs 3.117 af
Primary=8.42 cfs 2.614 af Secondary=10.45 cfs 0.503 af Outflow=18.87 cfs 3.117 af

Pond 66P: 24" Cross culvert Peak Elev=88.30' Storage=1,469 cf Inflow=20.79 cfs 3.503 af
Primary=20.15 cfs 3.503 af Secondary=0.00 cfs 0.000 af Outflow=20.15 cfs 3.503 af

Pond 100R: Vortech-DMH2 Peak Elev=108.83' Inflow=8.86 cfs 0.726 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=8.86 cfs 0.726 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=100.21' Inflow=8.86 cfs 0.726 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=8.86 cfs 0.726 af

Pond 102R: DMH1606-DMH9 Peak Elev=93.13' Inflow=8.86 cfs 0.726 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=8.86 cfs 0.726 af

Pond 103R: DMH9-DMH8 Peak Elev=95.06' Inflow=18.11 cfs 1.477 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=18.11 cfs 1.477 af

Pond 104R: DMH8-DMH200 Peak Elev=98.87' Inflow=19.40 cfs 1.587 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=19.40 cfs 1.587 af

Pond 105R: DMH200-OUTLET Peak Elev=92.48' Inflow=19.40 cfs 1.587 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=19.40 cfs 1.587 af

Total Runoff Area = 24.220 ac Runoff Volume = 5.321 af Average Runoff Depth = 2.64"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 8.38 cfs @ 12.13 hrs, Volume= 0.671 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.290	84	1 acre lots, 20% imp, HSG D
	0.290	87	1/4 acre lots, 38% imp, HSG D
*	0.220	98	Roadway
	2.240	77	Woods, Good, HSG D
*	0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
*	0.030	98	Building, Ocean Ridge
	3.160	80	Weighted Average
	2.742		86.77% Pervious Area
	0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		**Shallow Concentrated Flow, Shallow Rd Ditch**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 8.20 cfs @ 12.14 hrs, Volume= 0.671 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.900	98	IMPERVIOUS
*	0.380	77	WOODS D
*	1.320	80	LAWN D
	2.600	86	Weighted Average
	1.700		65.38% Pervious Area
	0.900		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 17.52 cfs @ 12.46 hrs, Volume= 2.285 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.640	87	1/4 acre lots, 38% imp, HSG D
*	0.050	98	Roadway
	10.590	77	Woods, Good, HSG D
*	0.040	98	Building, Ocean Ridge
*	0.050	98	Road, Ocean Ridge
*	0.030	77	Woods, Good, HSG D, Ocean Ridge
*	0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
	11.540	78	Weighted Average
	11.157		96.68% Pervious Area
	0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 0.077 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.040	98	Paved roads Ocean Ave
	0.260	84	1 acre lots, 20% imp, HSG D
	0.300	86	Weighted Average
	0.208		69.33% Pervious Area
	0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 4.60 cfs @ 12.15 hrs, Volume= 0.386 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.730	84	1 acre lots, 20% imp, HSG D
*	0.030	98	Roadway
	1.060	77	Woods, Good, HSG D
	1.820	80	Weighted Average
	1.644		90.33% Pervious Area
	0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035 Earth, dense weeds
0.9					**Direct Entry,**
5.0	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.220	98	Roadway
	0.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.110	98	IMPERVIOUS
*	0.080	80	LAWN D
	0.190	90	Weighted Average
	0.080		42.11% Pervious Area
	0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn**
					Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway**
					Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope**
					Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.033 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.090	98	Roadway
	0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow**
					Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.370	98	IMPERVIOUS
*	0.450	80	LAWN D
	0.820	88	Weighted Average
	0.450		54.88% Pervious Area
	0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD**
					Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.740	98	IMPERVIOUS
*	0.050	77	WOODS D
*	0.480	80	LAWN D
	1.270	90	Weighted Average
	0.530		41.73% Pervious Area
	0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC**
					Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:**
					Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 1.78 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.120	98	IMPERVIOUS
*	0.080	77	WOODS D
*	0.380	80	LAWN D
	0.580	83	Weighted Average
	0.460		79.31% Pervious Area
	0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 3.49" for Cumberland_10 event
Inflow = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af
Outflow = 4.19 cfs @ 12.23 hrs, Volume= 0.370 af, Atten= 8%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.73 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 14.8 min

Peak Storage= 979 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 2.29" for Cumberland_10 event
Inflow = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af
Outflow = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

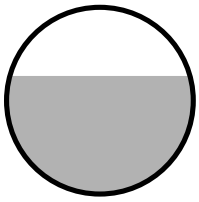
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af
Outflow = 2.22 cfs @ 12.29 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.06 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 0.7 min

Peak Storage= 22 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af
Outflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af, Atten= 5%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.65 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 11.0 min

Peak Storage= 470 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
Inflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af
Outflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af, Atten= 0%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 13.5 min

Peak Storage= 532 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
Inflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af
Outflow = 2.72 cfs @ 12.95 hrs, Volume= 0.730 af, Atten= 2%, Lag= 14.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 7.6 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 27.8 min

Peak Storage= 1,236 cf @ 12.82 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 1,180.0' Slope= 0.0581 '/'
Inlet Invert= 157.50', Outlet Invert= 89.00'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 2.65" for Cumberland_10 event
Inflow = 31.55 cfs @ 12.16 hrs, Volume= 5.090 af
Outflow = 31.55 cfs @ 12.16 hrs, Volume= 5.090 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
Inflow = 7.37 cfs @ 12.24 hrs, Volume= 0.730 af
Outflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af, Atten= 62%, Lag= 22.9 min
Primary = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 160.74' @ 12.62 hrs Surf.Area= 5,209 sf Storage= 10,521 cf

Plug-Flow detention time= 75.9 min calculated for 0.730 af (100% of inflow)
Center-of-Mass det. time= 76.0 min (896.4 - 820.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=2.79 cfs @ 12.62 hrs HW=160.74' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.49 cfs @ 7.60 fps)
- **2=Orifice/Grate** (Orifice Controls 1.29 cfs @ 2.94 fps)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af
Outflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af, Atten= 16%, Lag= 4.5 min
Primary = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 160.73' @ 12.28 hrs Surf.Area= 1,462 sf Storage= 1,151 cf

Plug-Flow detention time= 25.9 min calculated for 0.225 af (100% of inflow)
Center-of-Mass det. time= 26.0 min (839.7 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500
			Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.22 cfs @ 12.28 hrs HW=160.73' (Free Discharge)
- **1=Culvert** (Barrel Controls 2.22 cfs @ 3.82 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 2.91" for Cumberland_10 event
Inflow = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 90.65' @ 12.07 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.47 cfs @ 12.07 hrs HW=90.65' (Free Discharge)
1=Culvert (Inlet Controls 1.47 cfs @ 2.74 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 2.56" for Cumberland_10 event
Inflow = 18.92 cfs @ 12.46 hrs, Volume= 3.117 af
Outflow = 18.87 cfs @ 12.48 hrs, Volume= 3.117 af, Atten= 0%, Lag= 1.0 min
Primary = 8.42 cfs @ 12.48 hrs, Volume= 2.614 af
Secondary = 10.45 cfs @ 12.48 hrs, Volume= 0.503 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 89.82' @ 12.48 hrs Surf.Area= 3,039 sf Storage= 1,577 cf

Plug-Flow detention time= 0.8 min calculated for 3.117 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (871.1 - 870.3)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.42 cfs @ 12.48 hrs HW=89.82' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.42 cfs @ 4.76 fps)

Secondary OutFlow Max=10.45 cfs @ 12.48 hrs HW=89.82' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 10.45 cfs @ 1.48 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 2.56" for Cumberland_10 event
Inflow = 20.79 cfs @ 12.46 hrs, Volume= 3.503 af
Outflow = 20.15 cfs @ 12.54 hrs, Volume= 3.503 af, Atten= 3%, Lag= 4.7 min
Primary = 20.15 cfs @ 12.54 hrs, Volume= 3.503 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 88.30' @ 12.54 hrs Surf.Area= 1,573 sf Storage= 1,469 cf

Plug-Flow detention time= 0.4 min calculated for 3.503 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (866.9 - 866.6)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=20.15 cfs @ 12.54 hrs HW=88.30' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.15 cfs @ 6.41 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 108.83' @ 12.13 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=108.83' (Free Discharge)
1=Culvert (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 100.21' @ 12.13 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=100.21' (Free Discharge)
1=Culvert (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 93.13' @ 12.13 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=93.13' (Free Discharge)
1=Culvert (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 2.87" for Cumberland_10 event
Inflow = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af
Outflow = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af, Atten= 0%, Lag= 0.0 min
Primary = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 95.06' @ 12.13 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=18.11 cfs @ 12.13 hrs HW=95.06' (Free Discharge)
1=Culvert (Barrel Controls 18.11 cfs @ 10.25 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 2.90" for Cumberland_10 event
Inflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af
Outflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af, Atten= 0%, Lag= 0.0 min
Primary = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 98.87' @ 12.13 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=19.39 cfs @ 12.13 hrs HW=98.86' (Free Discharge)
1=Culvert (Barrel Controls 19.39 cfs @ 10.97 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 2.90" for Cumberland_10 event
Inflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af
Outflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af, Atten= 0%, Lag= 0.0 min
Primary = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 92.48' @ 12.13 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=19.39 cfs @ 12.13 hrs HW=92.47' (Free Discharge)
1=Culvert (Inlet Controls 19.39 cfs @ 10.97 fps)

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1 Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=3.60"
Flow Length=660' Tc=9.5 min CN=80 Runoff=11.82 cfs 0.948 af

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=4.22"
Flow Length=660' Tc=9.9 min CN=86 Runoff=11.06 cfs 0.914 af

Subcatchment 2: Subarea 2 Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=3.40"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=25.13 cfs 3.272 af

Subcatchment 3: Sub 3 Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=4.22"
Flow Length=300' Tc=9.4 min CN=86 Runoff=1.30 cfs 0.105 af

Subcatchment 4: Subarea 4 Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=3.31"
Flow Length=250' Tc=9.8 min CN=77 Runoff=4.12 cfs 0.333 af

Subcatchment 5: Subarea 5 Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=3.60"
Flow Length=660' Tc=11.0 min CN=80 Runoff=6.49 cfs 0.546 af

Subcatchment 6: Sub 6 Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=4.01"
Flow Length=235' Tc=5.0 min CN=84 Runoff=2.02 cfs 0.140 af

Subcatchment 100: Subarea 100 Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=572' Tc=6.6 min CN=98 Runoff=1.23 cfs 0.102 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=4.65"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.98 cfs 0.074 af

Subcatchment 300: Subarea 300 Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.53 cfs 0.042 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=4.43"
Flow Length=190' Tc=9.3 min CN=88 Runoff=3.69 cfs 0.303 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=4.65"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=5.97 cfs 0.492 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=3.91"
Flow Length=150' Tc=8.1 min CN=83 Runoff=2.45 cfs 0.189 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.83' Max Vel=0.79 fps Inflow=5.97 cfs 0.492 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=5.56 cfs 0.492 af

Reach 4R: SP#2 Inflow=4.12 cfs 0.333 af
Outflow=4.12 cfs 0.333 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.75' Max Vel=5.29 fps Inflow=3.04 cfs 0.303 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=3.04 cfs 0.303 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.63' Max Vel=0.71 fps Inflow=3.69 cfs 0.303 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=3.54 cfs 0.303 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.29' Max Vel=0.87 fps Inflow=3.95 cfs 0.984 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=3.93 cfs 0.984 af

Reach 34R: Woodland Flow Avg. Flow Depth=0.19' Max Vel=2.90 fps Inflow=3.93 cfs 0.984 af
n=0.035 L=1,180.0' S=0.0581 '/' Capacity=108.87 cfs Outflow=3.87 cfs 0.984 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=44.18 cfs 6.901 af
Outflow=44.18 cfs 6.901 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=161.33' Storage=13,782 cf Inflow=9.99 cfs 0.984 af
Outflow=3.95 cfs 0.984 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.88' Storage=1,387 cf Inflow=3.54 cfs 0.303 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=3.04 cfs 0.303 af

Pond 60R: FIELD CB Peak Elev=90.79' Inflow=2.02 cfs 0.140 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=2.02 cfs 0.140 af

Pond 62P: Driveway Culvert Peak Elev=89.97' Storage=2,065 cf Inflow=27.42 cfs 4.397 af
Primary=8.80 cfs 3.331 af Secondary=18.56 cfs 1.066 af Outflow=27.36 cfs 4.397 af

Pond 66P: 24" Cross culvert Peak Elev=88.91' Storage=1,817 cf Inflow=29.92 cfs 4.943 af
Primary=22.21 cfs 4.715 af Secondary=8.19 cfs 0.250 af Outflow=30.39 cfs 4.965 af

Pond 100R: Vortech-DMH2 Peak Elev=109.71' Inflow=11.92 cfs 0.988 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=11.92 cfs 0.988 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=101.09' Inflow=11.92 cfs 0.988 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=11.92 cfs 0.988 af

Pond 102R: DMH1606-DMH9 Peak Elev=94.01' Inflow=11.92 cfs 0.988 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=11.92 cfs 0.988 af

Pond 103R: DMH9-DMH8 Peak Elev=100.19' Inflow=24.85 cfs 2.038 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=24.85 cfs 2.038 af

Pond 104R: DMH8-DMH200 Peak Elev=108.29' Inflow=26.56 cfs 2.185 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=26.56 cfs 2.185 af

Pond 105R: DMH200-OUTLET Peak Elev=97.03' Inflow=26.56 cfs 2.185 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=26.56 cfs 2.185 af

Total Runoff Area = 24.220 ac Runoff Volume = 7.462 af Average Runoff Depth = 3.70"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 11.82 cfs @ 12.13 hrs, Volume= 0.948 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.290	84	1 acre lots, 20% imp, HSG D
	0.290	87	1/4 acre lots, 38% imp, HSG D
*	0.220	98	Roadway
	2.240	77	Woods, Good, HSG D
*	0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
*	0.030	98	Building, Ocean Ridge
	3.160	80	Weighted Average
	2.742		86.77% Pervious Area
	0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		**Shallow Concentrated Flow, Shallow Rd Ditch**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 11.06 cfs @ 12.13 hrs, Volume= 0.914 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.900	98	IMPERVIOUS
*	0.380	77	WOODS D
*	1.320	80	LAWN D
	2.600	86	Weighted Average
	1.700		65.38% Pervious Area
	0.900		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 25.13 cfs @ 12.46 hrs, Volume= 3.272 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.640	87	1/4 acre lots, 38% imp, HSG D
*	0.050	98	Roadway
	10.590	77	Woods, Good, HSG D
*	0.040	98	Building, Ocean Ridge
*	0.050	98	Road, Ocean Ridge
*	0.030	77	Woods, Good, HSG D, Ocean Ridge
*	0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
	11.540	78	Weighted Average
	11.157		96.68% Pervious Area
	0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 1.30 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.040	98	Paved roads Ocean Ave
	0.260	84	1 acre lots, 20% imp, HSG D
	0.300	86	Weighted Average
	0.208		69.33% Pervious Area
	0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 6.49 cfs @ 12.15 hrs, Volume= 0.546 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.730	84	1 acre lots, 20% imp, HSG D
*	0.030	98	Roadway
	1.060	77	Woods, Good, HSG D
	1.820	80	Weighted Average
	1.644		90.33% Pervious Area
	0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		**Sheet Flow, Overland Woods**
					Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		**Shallow Concentrated Flow, Overland Woods**
					Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035 Earth, dense weeds
0.9					**Direct Entry,**
5.0	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.220	98	Roadway
	0.220		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER**
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.110	98	IMPERVIOUS
*	0.080	80	LAWN D
	0.190	90	Weighted Average
	0.080		42.11% Pervious Area
	0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn**
					Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway**
					Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope**
					Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.090	98	Roadway
	0.090		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown**
					Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow**
					Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.370	98	IMPERVIOUS
*	0.450	80	LAWN D
	0.820	88	Weighted Average
	0.450		54.88% Pervious Area
	0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD**
					Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.740	98	IMPERVIOUS
*	0.050	77	WOODS D
*	0.480	80	LAWN D
	1.270	90	Weighted Average
	0.530		41.73% Pervious Area
	0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB**
					Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC**
					Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:**
					Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 2.45 cfs @ 12.11 hrs, Volume= 0.189 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.120	98	IMPERVIOUS
*	0.080	77	WOODS D
*	0.380	80	LAWN D
	0.580	83	Weighted Average
	0.460		79.31% Pervious Area
	0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC**
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 4.65" for Cumberland_25 event
Inflow = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af
Outflow = 5.56 cfs @ 12.22 hrs, Volume= 0.492 af, Atten= 7%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.79 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 13.6 min

Peak Storage= 1,192 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 3.31" for Cumberland_25 event
Inflow = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af
Outflow = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

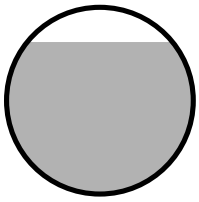
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af
Outflow = 3.04 cfs @ 12.28 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.7 min

Peak Storage= 29 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af
Outflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af, Atten= 4%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.71 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 10.1 min

Peak Storage= 574 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
Inflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af
Outflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af, Atten= 0%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 12.7 min

Peak Storage= 680 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
Inflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af
Outflow = 3.87 cfs @ 12.87 hrs, Volume= 0.984 af, Atten= 2%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.90 fps, Min. Travel Time= 6.8 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 26.3 min

Peak Storage= 1,576 cf @ 12.76 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 1,180.0' Slope= 0.0581 '/'
Inlet Invert= 157.50', Outlet Invert= 89.00'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 3.60" for Cumberland_25 event
Inflow = 44.18 cfs @ 12.14 hrs, Volume= 6.901 af
Outflow = 44.18 cfs @ 12.14 hrs, Volume= 6.901 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
Inflow = 9.99 cfs @ 12.22 hrs, Volume= 0.984 af
Outflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af, Atten= 60%, Lag= 21.4 min
Primary = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 161.33' @ 12.58 hrs Surf.Area= 5,928 sf Storage= 13,782 cf

Plug-Flow detention time= 71.5 min calculated for 0.984 af (100% of inflow)
Center-of-Mass det. time= 71.5 min (881.9 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=3.95 cfs @ 12.58 hrs HW=161.33' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.66 cfs @ 8.46 fps)
- **2=Orifice/Grate** (Orifice Controls 2.08 cfs @ 4.71 fps)
- **3=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.97 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af
Outflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af, Atten= 14%, Lag= 4.1 min
Primary = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 160.88' @ 12.27 hrs Surf.Area= 1,526 sf Storage= 1,387 cf

Plug-Flow detention time= 22.7 min calculated for 0.303 af (100% of inflow)
Center-of-Mass det. time= 22.8 min (827.3 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500
			Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900
			n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.04 cfs @ 12.27 hrs HW=160.88' (Free Discharge)
- **1=Culvert** (Barrel Controls 3.04 cfs @ 4.07 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 4.01" for Cumberland_25 event
Inflow = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af
Outflow = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 90.79' @ 12.07 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.02 cfs @ 12.07 hrs HW=90.79' (Free Discharge)
1=Culvert (Inlet Controls 2.02 cfs @ 3.03 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 3.61" for Cumberland_25 event
Inflow = 27.42 cfs @ 12.46 hrs, Volume= 4.397 af
Outflow = 27.36 cfs @ 12.49 hrs, Volume= 4.397 af, Atten= 0%, Lag= 1.5 min
Primary = 8.80 cfs @ 12.49 hrs, Volume= 3.331 af
Secondary = 18.56 cfs @ 12.49 hrs, Volume= 1.066 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 89.97' @ 12.49 hrs Surf.Area= 3,693 sf Storage= 2,065 cf

Plug-Flow detention time= 0.9 min calculated for 4.396 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (858.6 - 857.8)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.80 cfs @ 12.49 hrs HW=89.97' (Free Discharge)
└**1=Culvert** (Inlet Controls 8.80 cfs @ 4.98 fps)

Secondary OutFlow Max=18.56 cfs @ 12.49 hrs HW=89.97' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 18.56 cfs @ 1.81 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 3.61" for Cumberland_25 event
Inflow = 29.92 cfs @ 12.46 hrs, Volume= 4.943 af
Outflow = 30.39 cfs @ 12.46 hrs, Volume= 4.965 af, Atten= 0%, Lag= 0.0 min
Primary = 22.21 cfs @ 12.46 hrs, Volume= 4.715 af
Secondary = 8.19 cfs @ 12.46 hrs, Volume= 0.250 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4
Peak Elev= 88.91' @ 12.46 hrs Surf.Area= 1,850 sf Storage= 1,817 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (854.4 - 854.4)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=22.20 cfs @ 12.46 hrs HW=88.91' (Free Discharge)
└**1=Culvert** (Inlet Controls 22.20 cfs @ 7.07 fps)

Secondary OutFlow Max=8.18 cfs @ 12.46 hrs HW=88.91' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 8.18 cfs @ 1.67 fps)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 109.71' @ 12.13 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=109.71' (Free Discharge)
1=Culvert (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 101.09' @ 12.13 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=101.09' (Free Discharge)
1=Culvert (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 94.01' @ 12.13 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=94.01' (Free Discharge)
1=Culvert (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 3.96" for Cumberland_25 event
Inflow = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af
Outflow = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af, Atten= 0%, Lag= 0.0 min
Primary = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 100.19' @ 12.13 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=24.85 cfs @ 12.13 hrs HW=100.18' (Free Discharge)
1=Culvert (Barrel Controls 24.85 cfs @ 14.06 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 4.00" for Cumberland_25 event
Inflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af
Outflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af, Atten= 0%, Lag= 0.0 min
Primary = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 108.29' @ 12.13 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=26.54 cfs @ 12.13 hrs HW=108.26' (Free Discharge)
1=Culvert (Barrel Controls 26.54 cfs @ 15.02 fps)

Summary for Pond 105R: DMH200-OUTLET

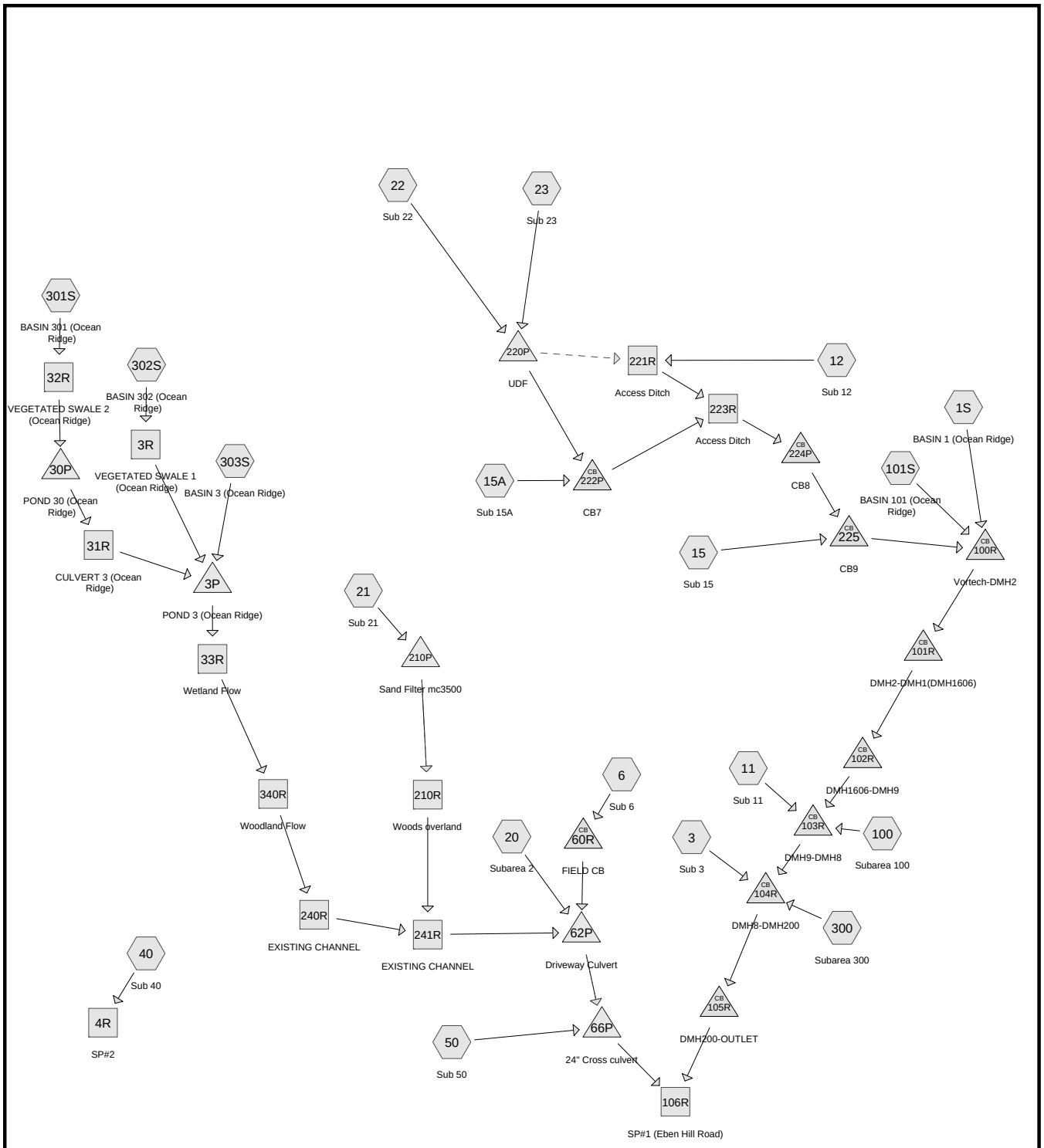
Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 4.00" for Cumberland_25 event
Inflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af
Outflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af, Atten= 0%, Lag= 0.0 min
Primary = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Peak Elev= 97.03' @ 12.13 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=26.54 cfs @ 12.13 hrs HW=97.01' (Free Discharge)
1=Culvert (Inlet Controls 26.54 cfs @ 15.02 fps)

Post-Development



Routing Diagram for 14432_Postdevelopment_AS BUILT_rev11-15

Prepared by Sebago Technics, Printed 11/20/2015

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.63	84	1 acre lots, 20% imp, HSG D (3, 6, 11, 50)
1.00	87	1/4 acre lots, 38% imp, HSG D (6, 11, 20)
2.19	80	>75% Grass cover, Good, HSG D (11, 12, 15, 15A, 20, 21, 22, 23, 50)
0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge (12)
2.24	98	IMPERVIOUS (1S, 101S, 301S, 302S, 303S)
2.71	80	LAWN D (1S, 101S, 301S, 302S, 303S)
0.04	98	Paved roads OCEAN AVE (12)
0.26	98	Paved roads Ocean Ave (3, 11, 50)
0.05	98	Paved roads Ocean Ridge (12)
0.23	98	Paved roads Site Drive (15, 15A)
0.05	98	Paved roads, Site Drive (11)
0.31	98	Roadway (100, 300)
0.05	98	Roadway, Ocean Ave (20)
0.07	98	Roofs, OCEAN RIDGE (12)
2.62	98	Site Development (21, 22)
0.51	77	WOODS D (1S, 302S, 303S)
10.00	77	Woods, Good, HSG D (11, 12, 20, 40, 50)
0.03	77	Woods, Good, HSG D Ocean Ridge (12)
24.22	**84**	**TOTAL AREA**

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=1.75"
Flow Length=660' Tc=9.9 min CN=86 Runoff=4.67 cfs 0.379 af

Subcatchment 3: Sub 3 Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=1.75"
Flow Length=300' Tc=9.4 min CN=86 Runoff=0.55 cfs 0.044 af

Subcatchment 6: Sub 6 Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=1.60"
Flow Length=235' Tc=5.0 min CN=84 Runoff=0.82 cfs 0.056 af

Subcatchment 11: Sub 11 Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=1.46"
Flow Length=375' Tc=7.3 min CN=82 Runoff=3.06 cfs 0.228 af

Subcatchment 12: Sub 12 Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=1.26"
Flow Length=380' Tc=20.9 min CN=79 Runoff=2.50 cfs 0.275 af

Subcatchment 15: Sub 15 Runoff Area=0.27 ac 62.96% Impervious Runoff Depth=2.16"
Flow Length=342' Tc=5.0 min CN=91 Runoff=0.70 cfs 0.049 af

Subcatchment 15A: Sub 15A Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=2.26"
Flow Length=87' Tc=5.0 min CN=92 Runoff=0.24 cfs 0.017 af

Subcatchment 20: Subarea 2 Runoff Area=6.30 ac 4.65% Impervious Runoff Depth=1.20"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=4.71 cfs 0.630 af

Subcatchment 21: Sub 21 Runoff Area=3.39 ac 64.01% Impervious Runoff Depth=2.26"
Tc=5.0 min CN=92 Runoff=9.09 cfs 0.637 af

Subcatchment 22: Sub 22 Runoff Area=0.68 ac 66.18% Impervious Runoff Depth=2.26"
Tc=5.0 min CN=92 Runoff=1.82 cfs 0.128 af

Subcatchment 23: Sub 23 Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=1.33"
Tc=5.0 min CN=80 Runoff=0.32 cfs 0.022 af

Subcatchment 40: Sub 40 Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=1.14"
Flow Length=250' Tc=9.8 min CN=77 Runoff=1.27 cfs 0.106 af

Subcatchment 50: Sub 50 Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=1.46"
Flow Length=360' Tc=9.9 min CN=82 Runoff=1.77 cfs 0.145 af

Subcatchment 100: Subarea 100 Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=572' Tc=6.6 min CN=98 Runoff=0.65 cfs 0.053 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=2.08"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.45 cfs 0.033 af

Subcatchment 300: Subarea 300 Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=2.87"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=1.91"
Flow Length=190' Tc=9.3 min CN=88 Runoff=1.63 cfs 0.130 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=2.08"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=2.76 cfs 0.220 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=1.53"
Flow Length=150' Tc=8.1 min CN=83 Runoff=0.96 cfs 0.074 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.53' Max Vel=0.62 fps Inflow=2.76 cfs 0.220 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=2.49 cfs 0.220 af

Reach 4R: SP#2 Inflow=1.27 cfs 0.106 af
Outflow=1.27 cfs 0.106 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.40' Max Vel=4.38 fps Inflow=1.22 cfs 0.130 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=1.22 cfs 0.130 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.39' Max Vel=0.54 fps Inflow=1.63 cfs 0.130 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=1.53 cfs 0.130 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.15' Max Vel=0.61 fps Inflow=1.24 cfs 0.423 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=1.24 cfs 0.423 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=15.97 cfs 3.099 af
Outflow=15.97 cfs 3.099 af

Reach 210R: Woods overland Avg. Flow Depth=0.09' Max Vel=1.59 fps Inflow=1.76 cfs 0.599 af
n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=1.76 cfs 0.599 af

Reach 221R: Access Ditch Avg. Flow Depth=0.21' Max Vel=4.44 fps Inflow=2.50 cfs 0.275 af
n=0.025 L=100.0' S=0.0600 '/' Capacity=51.82 cfs Outflow=2.50 cfs 0.275 af

Reach 223R: Access Ditch Avg. Flow Depth=0.23' Max Vel=4.24 fps Inflow=2.65 cfs 0.441 af
n=0.025 L=210.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=2.65 cfs 0.440 af

Reach 240R: EXISTING CHANNEL Avg. Flow Depth=0.15' Max Vel=3.28 fps Inflow=1.23 cfs 0.423 af
n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=1.23 cfs 0.423 af

Reach 241R: EXISTING CHANNEL Avg. Flow Depth=0.20' Max Vel=4.70 fps Inflow=2.68 cfs 1.022 af
n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=2.68 cfs 1.021 af

Reach 340R: Woodland Flow Avg. Flow Depth=0.11' Max Vel=1.81 fps Inflow=1.24 cfs 0.423 af
n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=1.23 cfs 0.423 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=159.97' Storage=6,326 cf Inflow=4.17 cfs 0.424 af
Outflow=1.24 cfs 0.423 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.52' Storage=815 cf Inflow=1.53 cfs 0.130 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=1.22 cfs 0.130 af

Pond 60R: FIELD CB Peak Elev=90.46' Inflow=0.82 cfs 0.056 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=0.82 cfs 0.056 af

Pond 62P: Driveway Culvert Peak Elev=89.35' Storage=568 cf Inflow=7.23 cfs 1.708 af
Primary=7.04 cfs 1.708 af Secondary=0.00 cfs 0.000 af Outflow=7.04 cfs 1.708 af

Pond 66P: 24" Cross culvert Peak Elev=85.94' Storage=52 cf Inflow=7.55 cfs 1.852 af
Primary=7.55 cfs 1.852 af Secondary=0.00 cfs 0.000 af Outflow=7.55 cfs 1.852 af

Pond 100R: Vortech-DMH2 Peak Elev=108.45' Inflow=7.16 cfs 0.901 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=7.16 cfs 0.901 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=99.83' Inflow=7.16 cfs 0.901 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=7.16 cfs 0.901 af

Pond 102R: DMH1606-DMH9 Peak Elev=92.75' Inflow=7.16 cfs 0.901 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=7.16 cfs 0.901 af

Pond 103R: DMH9-DMH8 Peak Elev=91.40' Inflow=10.70 cfs 1.182 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=10.70 cfs 1.182 af

Pond 104R: DMH8-DMH200 Peak Elev=91.87' Inflow=11.48 cfs 1.247 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=11.48 cfs 1.247 af

Pond 105R: DMH200-OUTLET Peak Elev=89.10' Inflow=11.48 cfs 1.247 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=11.48 cfs 1.247 af

Pond 210P: Sand Filter mc3500 Peak Elev=127.50' Storage=13,364 cf Inflow=9.09 cfs 0.637 af
Outflow=1.76 cfs 0.599 af

Pond 220P: UDF Peak Elev=126.30' Storage=3,576 cf Inflow=2.14 cfs 0.150 af
Primary=0.14 cfs 0.149 af Secondary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.149 af

Pond 222P: CB7 Peak Elev=121.76' Inflow=0.28 cfs 0.166 af
12.0" Round Culvert n=0.013 L=123.0' S=0.0106 '/' Outflow=0.28 cfs 0.166 af

Pond 224P: CB8 Peak Elev=107.88' Inflow=2.65 cfs 0.440 af
15.0" Round Culvert n=0.013 L=38.0' S=0.0050 '/' Outflow=2.65 cfs 0.440 af

Pond 225: CB9 Peak Elev=107.58' Inflow=2.89 cfs 0.489 af
15.0" Round Culvert n=0.013 L=21.0' S=0.0100 '/' Outflow=2.89 cfs 0.489 af

Total Runoff Area = 24.22 ac Runoff Volume = 3.246 af Average Runoff Depth = 1.61"
72.64% Pervious = 17.59 ac 27.36% Impervious = 6.63 ac

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 4.67 cfs @ 12.14 hrs, Volume= 0.379 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.90	98	IMPERVIOUS
*	0.38	77	WOODS D
*	1.32	80	LAWN D
	2.60	86	Weighted Average
	1.70		65.38% Pervious Area
	0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.55 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.04	98	Paved roads Ocean Ave
	0.26	84	1 acre lots, 20% imp, HSG D
	0.30	86	Weighted Average
	0.21		69.33% Pervious Area
	0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D**
					Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035
0.9					**Direct Entry,**
5.0	235	Total			

Summary for Subcatchment 11: Sub 11

Runoff = 3.06 cfs @ 12.11 hrs, Volume= 0.228 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	1.04	77	Woods, Good, HSG D
*	0.19	98	Paved roads Ocean Ave
*	0.05	98	Paved roads, Site Drive
	0.02	80	>75% Grass cover, Good, HSG D
	0.29	84	1 acre lots, 20% imp, HSG D
	0.29	87	1/4 acre lots, 38% imp, HSG D
	1.88	82	Weighted Average
	1.47		78.29% Pervious Area
	0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 2.50 cfs @ 12.30 hrs, Volume= 0.275 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	2.01	77	Woods, Good, HSG D
	0.18	80	>75% Grass cover, Good, HSG D
*	0.04	98	Paved roads OCEAN AVE
*	0.07	98	Roofs, OCEAN RIDGE
*	0.05	98	Paved roads Ocean Ridge
*	0.03	77	Woods, Good, HSG D Ocean Ridge
*	0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
	2.61	79	Weighted Average
	2.45		93.87% Pervious Area
	0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
20.9	380	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 0.70 cfs @ 12.07 hrs, Volume= 0.049 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.17	98	Paved roads Site Drive
	0.10	80	>75% Grass cover, Good, HSG D
	0.27	91	Weighted Average
	0.10		37.04% Pervious Area
	0.17		62.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
3.6					**Direct Entry, C-D**
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.06	98	Paved roads Site Drive
	0.03	80	>75% Grass cover, Good, HSG D
	0.09	92	Weighted Average
	0.03		33.33% Pervious Area
	0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
4.5					**Direct Entry, C-D**
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 4.71 cfs @ 12.46 hrs, Volume= 0.630 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.64	87	1/4 acre lots, 38% imp, HSG D
	0.12	80	>75% Grass cover, Good, HSG D
*	0.05	98	Roadway, Ocean Ave
	5.49	77	Woods, Good, HSG D
	6.30	78	Weighted Average
	6.01		95.35% Pervious Area
	0.29		4.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 9.09 cfs @ 12.07 hrs, Volume= 0.637 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	1.22	80	>75% Grass cover, Good, HSG D
*	2.17	98	Site Development
	3.39	92	Weighted Average
	1.22		35.99% Pervious Area
	2.17		64.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 22: Sub 22

Runoff = 1.82 cfs @ 12.07 hrs, Volume= 0.128 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.45	98	Site Development
	0.23	80	>75% Grass cover, Good, HSG D
	0.68	92	Weighted Average
	0.23		33.82% Pervious Area
	0.45		66.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 23: Sub 23

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 40: Sub 40

Runoff = 1.27 cfs @ 12.14 hrs, Volume= 0.106 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 1.77 cfs @ 12.14 hrs, Volume= 0.145 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
	0.34	77	Woods, Good, HSG D
	0.09	80	>75% Grass cover, Good, HSG D
*	0.03	98	Paved roads Ocean Ave
	0.73	84	1 acre lots, 20% imp, HSG D
	1.19	82	Weighted Average
	1.01		85.21% Pervious Area
	0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.22	98	Roadway
	0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER** Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.11	98	IMPERVIOUS
* 0.08	80	LAWN D
0.19	90	Weighted Average
0.08		42.11% Pervious Area
0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn** Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway** Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope** Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.09	98	Roadway
0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow** Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.37	98	IMPERVIOUS
*	0.45	80	LAWN D
	0.82	88	Weighted Average
	0.45		54.88% Pervious Area
	0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD** Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.74	98	IMPERVIOUS
*	0.05	77	WOODS D
*	0.48	80	LAWN D
	1.27	90	Weighted Average
	0.53		41.73% Pervious Area
	0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC** Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:** Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 0.96 cfs @ 12.12 hrs, Volume= 0.074 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

	Area (ac)	CN	Description
*	0.12	98	IMPERVIOUS
*	0.08	77	WOODS D
*	0.38	80	LAWN D
	0.58	83	Weighted Average
	0.46		79.31% Pervious Area
	0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB** Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 2.08" for Cumberland_02 event
Inflow = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af
Outflow = 2.49 cfs @ 12.25 hrs, Volume= 0.220 af, Atten= 10%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.62 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 17.1 min

Peak Storage= 685 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 1.14" for Cumberland_02 event
Inflow = 1.27 cfs @ 12.14 hrs, Volume= 0.106 af
Outflow = 1.27 cfs @ 12.14 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

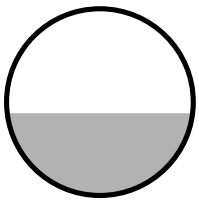
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af
Outflow = 1.22 cfs @ 12.33 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.38 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af
Outflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af, Atten= 6%, Lag= 5.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 12.7 min

Peak Storage= 325 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af
Outflow = 1.24 cfs @ 12.87 hrs, Volume= 0.423 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 4.1 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 12.0 min

Peak Storage= 303 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.68% Impervious, Inflow Depth > 1.61" for Cumberland_02 event
Inflow = 15.97 cfs @ 12.13 hrs, Volume= 3.099 af
Outflow = 15.97 cfs @ 12.13 hrs, Volume= 3.099 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 210R: Woods overland

Inflow Area = 3.39 ac, 64.01% Impervious, Inflow Depth > 2.12" for Cumberland_02 event
Inflow = 1.76 cfs @ 12.50 hrs, Volume= 0.599 af
Outflow = 1.76 cfs @ 12.52 hrs, Volume= 0.599 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.59 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 1.3 min

Peak Storage= 56 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 50.0' Slope= 0.0400 '/'
Inlet Invert= 112.00', Outlet Invert= 110.00'



‡

Summary for Reach 221R: Access Ditch

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 1.26" for Cumberland_02 event
Inflow = 2.50 cfs @ 12.30 hrs, Volume= 0.275 af
Outflow = 2.50 cfs @ 12.31 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.44 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 1.0 min

Peak Storage= 56 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 51.82 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 100.0' Slope= 0.0600 '/'
Inlet Invert= 127.00', Outlet Invert= 121.00'



‡

Summary for Reach 223R: Access Ditch

Inflow Area = 3.58 ac, 18.72% Impervious, Inflow Depth > 1.48" for Cumberland_02 event
Inflow = 2.65 cfs @ 12.31 hrs, Volume= 0.441 af
Outflow = 2.65 cfs @ 12.34 hrs, Volume= 0.440 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.24 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 2.8 min

Peak Storage= 131 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0500 '/'
Inlet Invert= 121.00', Outlet Invert= 110.50'



‡

Summary for Reach 240R: EXISTING CHANNEL

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
Inflow = 1.23 cfs @ 13.07 hrs, Volume= 0.423 af
Outflow = 1.23 cfs @ 13.12 hrs, Volume= 0.423 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 5.0 min

Peak Storage= 128 cf @ 13.09 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 340.0' Slope= 0.0529 '/'
Inlet Invert= 128.00', Outlet Invert= 110.00'



‡

Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 6.06 ac, 56.11% Impervious, Inflow Depth > 2.02" for Cumberland_02 event
Inflow = 2.68 cfs @ 12.79 hrs, Volume= 1.022 af
Outflow = 2.68 cfs @ 12.82 hrs, Volume= 1.021 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.70 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.96 fps, Avg. Travel Time= 2.5 min

Peak Storage= 171 cf @ 12.80 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 300.0' Slope= 0.0750 '/'
Inlet Invert= 110.00', Outlet Invert= 87.50'



‡

Summary for Reach 340R: Woodland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.87 hrs, Volume= 0.423 af
Outflow = 1.23 cfs @ 13.07 hrs, Volume= 0.423 af, Atten= 0%, Lag= 11.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.81 fps, Min. Travel Time= 6.5 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 18.0 min

Peak Storage= 478 cf @ 12.96 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 700.0' Slope= 0.0421 '/'
Inlet Invert= 157.50', Outlet Invert= 128.00'



‡

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 4.17 cfs @ 12.26 hrs, Volume= 0.424 af
Outflow = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af, Atten= 70%, Lag= 29.7 min
Primary = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 159.97' @ 12.75 hrs Surf.Area= 4,273 sf Storage= 6,326 cf

Plug-Flow detention time= 80.6 min calculated for 0.423 af (100% of inflow)
Center-of-Mass det. time= 79.6 min (919.1 - 839.5)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=1.24 cfs @ 12.75 hrs HW=159.97' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.24 cfs @ 6.32 fps)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
Inflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af
Outflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af, Atten= 20%, Lag= 5.7 min
Primary = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 160.52' @ 12.32 hrs Surf.Area= 1,371 sf Storage= 815 cf

Plug-Flow detention time= 33.0 min calculated for 0.130 af (100% of inflow)
Center-of-Mass det. time= 33.1 min (864.0 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.22 cfs @ 12.32 hrs HW=160.52' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.22 cfs @ 3.38 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 1.60" for Cumberland_02 event
Inflow = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af
Outflow = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 90.46' @ 12.08 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.08 hrs HW=90.46' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.81 cfs @ 2.31 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.78 ac, 29.65% Impervious, Inflow Depth > 1.60" for Cumberland_02 event
Inflow = 7.23 cfs @ 12.50 hrs, Volume= 1.708 af
Outflow = 7.04 cfs @ 12.59 hrs, Volume= 1.708 af, Atten= 3%, Lag= 5.3 min
Primary = 7.04 cfs @ 12.59 hrs, Volume= 1.708 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 89.35' @ 12.59 hrs Surf.Area= 1,354 sf Storage= 568 cf

Plug-Flow detention time= 0.3 min calculated for 1.707 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,025.4 - 1,025.1)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=7.04 cfs @ 12.59 hrs HW=89.35' (Free Discharge)
1=Culvert (Inlet Controls 7.04 cfs @ 3.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=88.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.97 ac, 28.39% Impervious, Inflow Depth > 1.59" for Cumberland_02 event
Inflow = 7.55 cfs @ 12.53 hrs, Volume= 1.852 af
Outflow = 7.55 cfs @ 12.53 hrs, Volume= 1.852 af, Atten= 0%, Lag= 0.1 min
Primary = 7.55 cfs @ 12.53 hrs, Volume= 1.852 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6
Peak Elev= 85.94' @ 12.53 hrs Surf.Area= 60 sf Storage= 52 cf

Plug-Flow detention time= 0.3 min calculated for 1.852 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (1,011.2 - 1,011.0)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=7.55 cfs @ 12.53 hrs HW=85.94' (Free Discharge)
1=Culvert (Barrel Controls 7.55 cfs @ 4.19 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 1.63" for Cumberland_02 event
Inflow = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af
Outflow = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af, Atten= 0%, Lag= 0.0 min
Primary = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 108.45' @ 12.14 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=7.16 cfs @ 12.14 hrs HW=108.45' (Free Discharge)
1=Culvert (Inlet Controls 7.16 cfs @ 4.10 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 1.63" for Cumberland_02 event
Inflow = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af
Outflow = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af, Atten= 0%, Lag= 0.0 min
Primary = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 99.83' @ 12.14 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=7.16 cfs @ 12.14 hrs HW=99.83' (Free Discharge)
1=Culvert (Inlet Controls 7.16 cfs @ 4.10 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 1.63" for Cumberland_02 event
Inflow = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af
Outflow = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af, Atten= 0%, Lag= 0.0 min
Primary = 7.16 cfs @ 12.14 hrs, Volume= 0.901 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 92.75' @ 12.14 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=7.16 cfs @ 12.14 hrs HW=92.75' (Free Discharge)
↑**1=Culvert** (Inlet Controls 7.16 cfs @ 4.10 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.74 ac, 28.35% Impervious, Inflow Depth > 1.62" for Cumberland_02 event
Inflow = 10.70 cfs @ 12.12 hrs, Volume= 1.182 af
Outflow = 10.70 cfs @ 12.12 hrs, Volume= 1.182 af, Atten= 0%, Lag= 0.0 min
Primary = 10.70 cfs @ 12.12 hrs, Volume= 1.182 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 91.40' @ 12.12 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.70 cfs @ 12.12 hrs HW=91.40' (Free Discharge)
↑**1=Culvert** (Inlet Controls 10.70 cfs @ 6.05 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.13 ac, 29.14% Impervious, Inflow Depth > 1.64" for Cumberland_02 event
Inflow = 11.48 cfs @ 12.12 hrs, Volume= 1.247 af
Outflow = 11.48 cfs @ 12.12 hrs, Volume= 1.247 af, Atten= 0%, Lag= 0.0 min
Primary = 11.48 cfs @ 12.12 hrs, Volume= 1.247 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 91.87' @ 12.12 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.47 cfs @ 12.12 hrs HW=91.87' (Free Discharge)
1=Culvert (Barrel Controls 11.47 cfs @ 6.49 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.13 ac, 29.14% Impervious, Inflow Depth > 1.64" for Cumberland_02 event
Inflow = 11.48 cfs @ 12.12 hrs, Volume= 1.247 af
Outflow = 11.48 cfs @ 12.12 hrs, Volume= 1.247 af, Atten= 0%, Lag= 0.0 min
Primary = 11.48 cfs @ 12.12 hrs, Volume= 1.247 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 89.10' @ 12.12 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.47 cfs @ 12.12 hrs HW=89.10' (Free Discharge)
1=Culvert (Inlet Controls 11.47 cfs @ 6.49 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.39 ac, 64.01% Impervious, Inflow Depth = 2.26" for Cumberland_02 event
Inflow = 9.09 cfs @ 12.07 hrs, Volume= 0.637 af
Outflow = 1.76 cfs @ 12.50 hrs, Volume= 0.599 af, Atten= 81%, Lag= 25.9 min
Primary = 1.76 cfs @ 12.50 hrs, Volume= 0.599 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 127.50' @ 12.50 hrs Surf.Area= 6,773 sf Storage= 13,364 cf

Plug-Flow detention time= 484.6 min calculated for 0.599 af (94% of inflow)
Center-of-Mass det. time= 452.2 min (1,250.2 - 798.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.87'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=1.76 cfs @ 12.50 hrs HW=127.50' (Free Discharge)
└**1=Culvert** (Passes 1.76 cfs of 14.32 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 11.38 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.64 cfs @ 3.07 fps)
  └**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 220P: UDF

Inflow Area = 0.88 ac, 51.14% Impervious, Inflow Depth = 2.04" for Cumberland_02 event
Inflow = 2.14 cfs @ 12.07 hrs, Volume= 0.150 af
Outflow = 0.14 cfs @ 13.75 hrs, Volume= 0.149 af, Atten= 94%, Lag= 100.4 min
Primary = 0.14 cfs @ 13.75 hrs, Volume= 0.149 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 126.30' @ 13.75 hrs Surf.Area= 3,278 sf Storage= 3,576 cf

Plug-Flow detention time= 586.9 min calculated for 0.149 af (100% of inflow)
Center-of-Mass det. time= 583.8 min (1,388.5 - 804.7)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**2.0" Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 1	127.00'	**20.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.14 cfs @ 13.75 hrs HW=126.30' (Free Discharge)
└**1=Culvert** (Passes 0.14 cfs of 5.78 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 8.92 fps)
  │ └**3=Exfiltration** (Passes 0.04 cfs of 0.18 cfs potential flow)
  ├**4=Orifice/Grate** (Orifice Controls 0.10 cfs @ 2.22 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 222P: CB7

Inflow Area = 0.97 ac, 52.58% Impervious, Inflow Depth > 2.05" for Cumberland_02 event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 0.166 af
Outflow = 0.28 cfs @ 12.07 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.07 hrs, Volume= 0.166 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 121.76' @ 12.07 hrs
Flood Elev= 125.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	121.50'	**12.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.50' / 120.20' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.07 hrs HW=121.76' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.28 cfs @ 1.73 fps)

Summary for Pond 224P: CB8

Inflow Area = 3.58 ac, 18.72% Impervious, Inflow Depth > 1.48" for Cumberland_02 event
Inflow = 2.65 cfs @ 12.34 hrs, Volume= 0.440 af
Outflow = 2.65 cfs @ 12.34 hrs, Volume= 0.440 af, Atten= 0%, Lag= 0.0 min
Primary = 2.65 cfs @ 12.34 hrs, Volume= 0.440 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 107.88' @ 12.34 hrs
Flood Elev= 111.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.90'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 106.90' / 106.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.65 cfs @ 12.34 hrs HW=107.88' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.65 cfs @ 3.51 fps)

Summary for Pond 225: CB9

Inflow Area = 3.85 ac, 21.82% Impervious, Inflow Depth > 1.52" for Cumberland_02 event
Inflow = 2.89 cfs @ 12.33 hrs, Volume= 0.489 af
Outflow = 2.89 cfs @ 12.33 hrs, Volume= 0.489 af, Atten= 0%, Lag= 0.0 min
Primary = 2.89 cfs @ 12.33 hrs, Volume= 0.489 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 107.58' @ 12.33 hrs
Flood Elev= 111.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.61'	**15.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 106.61' / 106.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.89 cfs @ 12.33 hrs HW=107.58' (Free Discharge)
↑**1=Culvert** (Barrel Controls 2.89 cfs @ 3.89 fps)

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=3.10"
Flow Length=660' Tc=9.9 min CN=86 Runoff=8.20 cfs 0.671 af

Subcatchment 3: Sub 3 Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=3.10"
Flow Length=300' Tc=9.4 min CN=86 Runoff=0.96 cfs 0.077 af

Subcatchment 6: Sub 6 Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=2.91"
Flow Length=235' Tc=5.0 min CN=84 Runoff=1.48 cfs 0.102 af

Subcatchment 11: Sub 11 Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=2.72"
Flow Length=375' Tc=7.3 min CN=82 Runoff=5.73 cfs 0.427 af

Subcatchment 12: Sub 12 Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=2.46"
Flow Length=380' Tc=20.9 min CN=79 Runoff=4.98 cfs 0.535 af

Subcatchment 15: Sub 15 Runoff Area=0.27 ac 62.96% Impervious Runoff Depth=3.59"
Flow Length=342' Tc=5.0 min CN=91 Runoff=1.14 cfs 0.081 af

Subcatchment 15A: Sub 15A Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=3.70"
Flow Length=87' Tc=5.0 min CN=92 Runoff=0.39 cfs 0.028 af

Subcatchment 20: Subarea 2 Runoff Area=6.30 ac 4.65% Impervious Runoff Depth=2.38"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=9.56 cfs 1.247 af

Subcatchment 21: Sub 21 Runoff Area=3.39 ac 64.01% Impervious Runoff Depth=3.70"
Tc=5.0 min CN=92 Runoff=14.54 cfs 1.045 af

Subcatchment 22: Sub 22 Runoff Area=0.68 ac 66.18% Impervious Runoff Depth=3.70"
Tc=5.0 min CN=92 Runoff=2.92 cfs 0.210 af

Subcatchment 23: Sub 23 Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=2.55"
Tc=5.0 min CN=80 Runoff=0.62 cfs 0.042 af

Subcatchment 40: Sub 40 Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=2.29"
Flow Length=250' Tc=9.8 min CN=77 Runoff=2.64 cfs 0.214 af

Subcatchment 50: Sub 50 Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=2.72"
Flow Length=360' Tc=9.9 min CN=82 Runoff=3.33 cfs 0.270 af

Subcatchment 100: Subarea 100 Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=572' Tc=6.6 min CN=98 Runoff=0.97 cfs 0.080 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=3.49"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.74 cfs 0.055 af

Subcatchment 300: Subarea 300 Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=4.36"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.42 cfs 0.033 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=3.29"
Flow Length=190' Tc=9.3 min CN=88 Runoff=2.78 cfs 0.225 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=3.49"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=4.55 cfs 0.370 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=2.81"
Flow Length=150' Tc=8.1 min CN=83 Runoff=1.78 cfs 0.136 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.71' Max Vel=0.73 fps Inflow=4.55 cfs 0.370 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=4.19 cfs 0.370 af

Reach 4R: SP#2 Inflow=2.64 cfs 0.214 af
Outflow=2.64 cfs 0.214 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.58' Max Vel=5.06 fps Inflow=2.22 cfs 0.225 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=2.22 cfs 0.225 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.54' Max Vel=0.65 fps Inflow=2.78 cfs 0.225 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=2.64 cfs 0.225 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.24' Max Vel=0.78 fps Inflow=2.79 cfs 0.730 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=2.78 cfs 0.730 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=31.08 cfs 5.582 af
Outflow=31.08 cfs 5.582 af

Reach 210R: Woods overland Avg. Flow Depth=0.15' Max Vel=2.05 fps Inflow=3.86 cfs 1.001 af
n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=3.86 cfs 1.000 af

Reach 221R: Access Ditch Avg. Flow Depth=0.31' Max Vel=5.46 fps Inflow=4.98 cfs 0.535 af
n=0.025 L=100.0' S=0.0600 '/' Capacity=51.82 cfs Outflow=4.98 cfs 0.535 af

Reach 223R: Access Ditch Avg. Flow Depth=0.34' Max Vel=5.22 fps Inflow=5.34 cfs 0.810 af
n=0.025 L=210.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=5.33 cfs 0.810 af

Reach 240R: EXISTING CHANNEL Avg. Flow Depth=0.23' Max Vel=4.20 fps Inflow=2.75 cfs 0.730 af
n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=2.75 cfs 0.730 af

Reach 241R: EXISTING CHANNEL Avg. Flow Depth=0.31' Max Vel=5.94 fps Inflow=5.96 cfs 1.730 af
n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=5.96 cfs 1.730 af

Reach 340R: Woodland Flow Avg. Flow Depth=0.17' Max Vel=2.33 fps Inflow=2.78 cfs 0.730 af
n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=2.75 cfs 0.730 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=160.74' Storage=10,521 cf Inflow=7.37 cfs 0.730 af
Outflow=2.79 cfs 0.730 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.73' Storage=1,151 cf Inflow=2.64 cfs 0.225 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=2.22 cfs 0.225 af

Pond 60R: FIELD CB Peak Elev=90.65' Inflow=1.48 cfs 0.102 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=1.48 cfs 0.102 af

Pond 62P: Driveway Culvert Peak Elev=89.74' Storage=1,340 cf Inflow=14.85 cfs 3.079 af
Primary=8.19 cfs 2.737 af Secondary=6.63 cfs 0.342 af Outflow=14.82 cfs 3.079 af

Pond 66P: 24" Cross culvert Peak Elev=87.24' Storage=395 cf Inflow=16.06 cfs 3.349 af
Primary=15.99 cfs 3.349 af Secondary=0.00 cfs 0.000 af Outflow=15.99 cfs 3.349 af

Pond 100R: Vortech-DMH2 Peak Elev=110.14' Inflow=13.14 cfs 1.617 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=13.14 cfs 1.617 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=101.52' Inflow=13.14 cfs 1.617 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=13.14 cfs 1.617 af

Pond 102R: DMH1606-DMH9 Peak Elev=94.44' Inflow=13.14 cfs 1.617 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=13.14 cfs 1.617 af

Pond 103R: DMH9-DMH8 Peak Elev=96.00' Inflow=19.53 cfs 2.124 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=19.53 cfs 2.124 af

Pond 104R: DMH8-DMH200 Peak Elev=100.51' Inflow=20.83 cfs 2.234 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=20.83 cfs 2.234 af

Pond 105R: DMH200-OUTLET Peak Elev=93.27' Inflow=20.83 cfs 2.234 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=20.83 cfs 2.234 af

Pond 210P: Sand Filter mc3500 Peak Elev=129.18' Storage=20,328 cf Inflow=14.54 cfs 1.045 af
Outflow=3.86 cfs 1.001 af

Pond 220P: UDF Peak Elev=126.99' Storage=6,092 cf Inflow=3.54 cfs 0.252 af
Primary=0.24 cfs 0.247 af Secondary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.247 af

Pond 222P: CB7 Peak Elev=121.86' Inflow=0.53 cfs 0.275 af
12.0" Round Culvert n=0.013 L=123.0' S=0.0106 '/' Outflow=0.53 cfs 0.275 af

Pond 224P: CB8 Peak Elev=108.66' Inflow=5.33 cfs 0.810 af
15.0" Round Culvert n=0.013 L=38.0' S=0.0050 '/' Outflow=5.33 cfs 0.810 af

Pond 225: CB9 Peak Elev=108.33' Inflow=5.74 cfs 0.891 af
15.0" Round Culvert n=0.013 L=21.0' S=0.0100 '/' Outflow=5.74 cfs 0.891 af

Total Runoff Area = 24.22 ac Runoff Volume = 5.847 af Average Runoff Depth = 2.90"
72.64% Pervious = 17.59 ac 27.36% Impervious = 6.63 ac

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 8.20 cfs @ 12.14 hrs, Volume= 0.671 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.90	98	IMPERVIOUS
*	0.38	77	WOODS D
*	1.32	80	LAWN D
	2.60	86	Weighted Average
	1.70		65.38% Pervious Area
	0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 0.077 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.04	98	Paved roads Ocean Ave
	0.26	84	1 acre lots, 20% imp, HSG D
	0.30	86	Weighted Average
	0.21		69.33% Pervious Area
	0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D**
					Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035
0.9					**Direct Entry,**
5.0	235	Total			

Summary for Subcatchment 11: Sub 11

Runoff = 5.73 cfs @ 12.11 hrs, Volume= 0.427 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	1.04	77	Woods, Good, HSG D
*	0.19	98	Paved roads Ocean Ave
*	0.05	98	Paved roads, Site Drive
	0.02	80	>75% Grass cover, Good, HSG D
	0.29	84	1 acre lots, 20% imp, HSG D
	0.29	87	1/4 acre lots, 38% imp, HSG D
	1.88	82	Weighted Average
	1.47		78.29% Pervious Area
	0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 4.98 cfs @ 12.29 hrs, Volume= 0.535 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	2.01	77	Woods, Good, HSG D
	0.18	80	>75% Grass cover, Good, HSG D
*	0.04	98	Paved roads OCEAN AVE
*	0.07	98	Roofs, OCEAN RIDGE
*	0.05	98	Paved roads Ocean Ridge
*	0.03	77	Woods, Good, HSG D Ocean Ridge
*	0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
	2.61	79	Weighted Average
	2.45		93.87% Pervious Area
	0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
20.9	380	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 1.14 cfs @ 12.07 hrs, Volume= 0.081 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.17	98	Paved roads Site Drive
	0.10	80	>75% Grass cover, Good, HSG D
	0.27	91	Weighted Average
	0.10		37.04% Pervious Area
	0.17		62.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
3.6					**Direct Entry, C-D**
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 0.028 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.06	98	Paved roads Site Drive
	0.03	80	>75% Grass cover, Good, HSG D
	0.09	92	Weighted Average
	0.03		33.33% Pervious Area
	0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
4.5					**Direct Entry, C-D**
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 9.56 cfs @ 12.46 hrs, Volume= 1.247 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.64	87	1/4 acre lots, 38% imp, HSG D
	0.12	80	>75% Grass cover, Good, HSG D
*	0.05	98	Roadway, Ocean Ave
	5.49	77	Woods, Good, HSG D
	6.30	78	Weighted Average
	6.01		95.35% Pervious Area
	0.29		4.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 14.54 cfs @ 12.07 hrs, Volume= 1.045 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	1.22	80	>75% Grass cover, Good, HSG D
*	2.17	98	Site Development
	3.39	92	Weighted Average
	1.22		35.99% Pervious Area
	2.17		64.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 22: Sub 22

Runoff = 2.92 cfs @ 12.07 hrs, Volume= 0.210 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.45	98	Site Development
	0.23	80	>75% Grass cover, Good, HSG D
	0.68	92	Weighted Average
	0.23		33.82% Pervious Area
	0.45		66.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 23: Sub 23

Runoff = 0.62 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 40: Sub 40

Runoff = 2.64 cfs @ 12.14 hrs, Volume= 0.214 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 3.33 cfs @ 12.14 hrs, Volume= 0.270 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
	0.34	77	Woods, Good, HSG D
	0.09	80	>75% Grass cover, Good, HSG D
*	0.03	98	Paved roads Ocean Ave
	0.73	84	1 acre lots, 20% imp, HSG D
	1.19	82	Weighted Average
	1.01		85.21% Pervious Area
	0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.22	98	Roadway
	0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER** Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.11	98	IMPERVIOUS
* 0.08	80	LAWN D
0.19	90	Weighted Average
0.08		42.11% Pervious Area
0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn** Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway** Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope** Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.033 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.09	98	Roadway
0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow** Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.37	98	IMPERVIOUS
*	0.45	80	LAWN D
	0.82	88	Weighted Average
	0.45		54.88% Pervious Area
	0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD** Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.74	98	IMPERVIOUS
*	0.05	77	WOODS D
*	0.48	80	LAWN D
	1.27	90	Weighted Average
	0.53		41.73% Pervious Area
	0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC** Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:** Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 1.78 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

	Area (ac)	CN	Description
*	0.12	98	IMPERVIOUS
*	0.08	77	WOODS D
*	0.38	80	LAWN D
	0.58	83	Weighted Average
	0.46		79.31% Pervious Area
	0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB** Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 3.49" for Cumberland_10 event
Inflow = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af
Outflow = 4.19 cfs @ 12.23 hrs, Volume= 0.370 af, Atten= 8%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.73 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 14.8 min

Peak Storage= 980 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 2.29" for Cumberland_10 event
Inflow = 2.64 cfs @ 12.14 hrs, Volume= 0.214 af
Outflow = 2.64 cfs @ 12.14 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

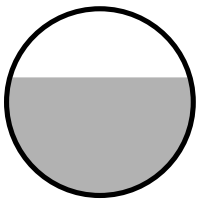
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af
Outflow = 2.22 cfs @ 12.29 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.06 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.7 min

Peak Storage= 22 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af
Outflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af, Atten= 5%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.65 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 11.0 min

Peak Storage= 470 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
Inflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af
Outflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af, Atten= 0%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.24 fps, Avg. Travel Time= 10.5 min

Peak Storage= 532 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.68% Impervious, Inflow Depth > 2.90" for Cumberland_10 event
Inflow = 31.08 cfs @ 12.13 hrs, Volume= 5.582 af
Outflow = 31.08 cfs @ 12.13 hrs, Volume= 5.582 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 210R: Woods overland

Inflow Area = 3.39 ac, 64.01% Impervious, Inflow Depth > 3.54" for Cumberland_10 event
Inflow = 3.86 cfs @ 12.42 hrs, Volume= 1.001 af
Outflow = 3.86 cfs @ 12.43 hrs, Volume= 1.000 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.05 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 1.2 min

Peak Storage= 94 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 50.0' Slope= 0.0400 '/'
Inlet Invert= 112.00', Outlet Invert= 110.00'



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Summary for Reach 221R: Access Ditch

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 2.46" for Cumberland_10 event
Inflow = 4.98 cfs @ 12.29 hrs, Volume= 0.535 af
Outflow = 4.98 cfs @ 12.30 hrs, Volume= 0.535 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.46 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.93 fps, Avg. Travel Time= 0.9 min

Peak Storage= 91 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 51.82 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 100.0' Slope= 0.0600 '/'
Inlet Invert= 127.00', Outlet Invert= 121.00'



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Summary for Reach 223R: Access Ditch

Inflow Area = 3.58 ac, 18.72% Impervious, Inflow Depth > 2.72" for Cumberland_10 event
Inflow = 5.34 cfs @ 12.30 hrs, Volume= 0.810 af
Outflow = 5.33 cfs @ 12.32 hrs, Volume= 0.810 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.22 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.42 fps, Avg. Travel Time= 2.5 min

Peak Storage= 214 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0500 '/'
Inlet Invert= 121.00', Outlet Invert= 110.50'



‡

Summary for Reach 240R: EXISTING CHANNEL

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
Inflow = 2.75 cfs @ 12.87 hrs, Volume= 0.730 af
Outflow = 2.75 cfs @ 12.91 hrs, Volume= 0.730 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.20 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 4.4 min

Peak Storage= 223 cf @ 12.88 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 340.0' Slope= 0.0529 '/'
Inlet Invert= 128.00', Outlet Invert= 110.00'



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Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 6.06 ac, 56.11% Impervious, Inflow Depth > 3.43" for Cumberland_10 event
Inflow = 5.96 cfs @ 12.80 hrs, Volume= 1.730 af
Outflow = 5.96 cfs @ 12.82 hrs, Volume= 1.730 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.94 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.16 fps, Avg. Travel Time= 2.3 min

Peak Storage= 301 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 300.0' Slope= 0.0750 '/'
Inlet Invert= 110.00', Outlet Invert= 87.50'



‡

Summary for Reach 340R: Woodland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
Inflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af
Outflow = 2.75 cfs @ 12.87 hrs, Volume= 0.730 af, Atten= 1%, Lag= 9.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.33 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 15.9 min

Peak Storage= 826 cf @ 12.78 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 700.0' Slope= 0.0421 '/'
Inlet Invert= 157.50', Outlet Invert= 128.00'



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Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
Inflow = 7.37 cfs @ 12.24 hrs, Volume= 0.730 af
Outflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af, Atten= 62%, Lag= 22.9 min
Primary = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 160.74' @ 12.62 hrs Surf.Area= 5,209 sf Storage= 10,521 cf

Plug-Flow detention time= 75.3 min calculated for 0.730 af (100% of inflow)
Center-of-Mass det. time= 74.8 min (895.1 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=2.79 cfs @ 12.62 hrs HW=160.74' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.49 cfs @ 7.60 fps)
- **2=Orifice/Grate** (Orifice Controls 1.29 cfs @ 2.94 fps)
- **3=Orifice/Grate** (Controls 0.00 cfs)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
Inflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af
Outflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af, Atten= 16%, Lag= 4.5 min
Primary = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 160.73' @ 12.28 hrs Surf.Area= 1,462 sf Storage= 1,151 cf

Plug-Flow detention time= 25.7 min calculated for 0.225 af (100% of inflow)
Center-of-Mass det. time= 25.8 min (839.5 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.22 cfs @ 12.28 hrs HW=160.73' (Free Discharge)
↑**1=Culvert** (Barrel Controls 2.22 cfs @ 3.82 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 2.91" for Cumberland_10 event
Inflow = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 90.65' @ 12.07 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.47 cfs @ 12.07 hrs HW=90.65' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.47 cfs @ 2.74 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.78 ac, 29.65% Impervious, Inflow Depth > 2.89" for Cumberland_10 event
Inflow = 14.85 cfs @ 12.46 hrs, Volume= 3.079 af
Outflow = 14.82 cfs @ 12.48 hrs, Volume= 3.079 af, Atten= 0%, Lag= 1.2 min
Primary = 8.19 cfs @ 12.48 hrs, Volume= 2.737 af
Secondary = 6.63 cfs @ 12.48 hrs, Volume= 0.342 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 89.74' @ 12.48 hrs Surf.Area= 2,694 sf Storage= 1,340 cf

Plug-Flow detention time= 0.8 min calculated for 3.079 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (944.2 - 943.4)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.19 cfs @ 12.48 hrs HW=89.74' (Free Discharge)
1=Culvert (Inlet Controls 8.19 cfs @ 4.64 fps)

Secondary OutFlow Max=6.62 cfs @ 12.48 hrs HW=89.74' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 6.62 cfs @ 1.27 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.97 ac, 28.39% Impervious, Inflow Depth > 2.88" for Cumberland_10 event
Inflow = 16.06 cfs @ 12.46 hrs, Volume= 3.349 af
Outflow = 15.99 cfs @ 12.49 hrs, Volume= 3.349 af, Atten= 0%, Lag= 1.7 min
Primary = 15.99 cfs @ 12.49 hrs, Volume= 3.349 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6
Peak Elev= 87.24' @ 12.49 hrs Surf.Area= 579 sf Storage= 395 cf

Plug-Flow detention time= 0.2 min calculated for 3.349 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (934.6 - 934.5)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=15.99 cfs @ 12.49 hrs HW=87.24' (Free Discharge)
└**1=Culvert** (Inlet Controls 15.99 cfs @ 5.09 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 2.92" for Cumberland_10 event
Inflow = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af
Outflow = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af, Atten= 0%, Lag= 0.0 min
Primary = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 110.14' @ 12.14 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=13.14 cfs @ 12.14 hrs HW=110.13' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.14 cfs @ 7.43 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 2.92" for Cumberland_10 event
Inflow = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af
Outflow = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af, Atten= 0%, Lag= 0.0 min
Primary = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 101.52' @ 12.14 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=13.14 cfs @ 12.14 hrs HW=101.51' (Free Discharge)
└**1=Culvert** (Inlet Controls 13.14 cfs @ 7.43 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 2.92" for Cumberland_10 event
Inflow = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af
Outflow = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af, Atten= 0%, Lag= 0.0 min
Primary = 13.14 cfs @ 12.14 hrs, Volume= 1.617 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 94.44' @ 12.14 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=13.14 cfs @ 12.14 hrs HW=94.43' (Free Discharge)
1=Culvert (Inlet Controls 13.14 cfs @ 7.43 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.74 ac, 28.35% Impervious, Inflow Depth > 2.92" for Cumberland_10 event
Inflow = 19.53 cfs @ 12.12 hrs, Volume= 2.124 af
Outflow = 19.53 cfs @ 12.12 hrs, Volume= 2.124 af, Atten= 0%, Lag= 0.0 min
Primary = 19.53 cfs @ 12.12 hrs, Volume= 2.124 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 96.00' @ 12.12 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=19.51 cfs @ 12.12 hrs HW=95.99' (Free Discharge)
1=Culvert (Barrel Controls 19.51 cfs @ 11.04 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.13 ac, 29.14% Impervious, Inflow Depth > 2.94" for Cumberland_10 event
Inflow = 20.83 cfs @ 12.12 hrs, Volume= 2.234 af
Outflow = 20.83 cfs @ 12.12 hrs, Volume= 2.234 af, Atten= 0%, Lag= 0.0 min
Primary = 20.83 cfs @ 12.12 hrs, Volume= 2.234 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 100.51' @ 12.12 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=20.82 cfs @ 12.12 hrs HW=100.50' (Free Discharge)
1=Culvert (Barrel Controls 20.82 cfs @ 11.78 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.13 ac, 29.14% Impervious, Inflow Depth > 2.94" for Cumberland_10 event
Inflow = 20.83 cfs @ 12.12 hrs, Volume= 2.234 af
Outflow = 20.83 cfs @ 12.12 hrs, Volume= 2.234 af, Atten= 0%, Lag= 0.0 min
Primary = 20.83 cfs @ 12.12 hrs, Volume= 2.234 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 93.27' @ 12.12 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=20.82 cfs @ 12.12 hrs HW=93.27' (Free Discharge)
1=Culvert (Inlet Controls 20.82 cfs @ 11.78 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.39 ac, 64.01% Impervious, Inflow Depth = 3.70" for Cumberland_10 event
Inflow = 14.54 cfs @ 12.07 hrs, Volume= 1.045 af
Outflow = 3.86 cfs @ 12.42 hrs, Volume= 1.001 af, Atten= 73%, Lag= 20.8 min
Primary = 3.86 cfs @ 12.42 hrs, Volume= 1.001 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 129.18' @ 12.42 hrs Surf.Area= 6,773 sf Storage= 20,328 cf

Plug-Flow detention time= 319.5 min calculated for 1.001 af (96% of inflow)
Center-of-Mass det. time= 295.3 min (1,079.8 - 784.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.87'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=3.86 cfs @ 12.42 hrs HW=129.18' (Free Discharge)
└**1=Culvert** (Passes 3.86 cfs of 16.25 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.14 cfs @ 12.98 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.72 cfs @ 6.97 fps)
  └**4=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 220P: UDF

Inflow Area = 0.88 ac, 51.14% Impervious, Inflow Depth = 3.44" for Cumberland_10 event
Inflow = 3.54 cfs @ 12.07 hrs, Volume= 0.252 af
Outflow = 0.24 cfs @ 13.43 hrs, Volume= 0.247 af, Atten= 93%, Lag= 81.3 min
Primary = 0.24 cfs @ 13.43 hrs, Volume= 0.247 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 126.99' @ 13.43 hrs Surf.Area= 3,988 sf Storage= 6,092 cf

Plug-Flow detention time= 463.3 min calculated for 0.247 af (98% of inflow)
Center-of-Mass det. time= 451.4 min (1,242.6 - 791.2)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**2.0" Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 1	127.00'	**20.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.24 cfs @ 13.43 hrs HW=126.99' (Free Discharge)
└**1=Culvert** (Passes 0.24 cfs of 6.41 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 9.77 fps)
  │ └**3=Exfiltration** (Passes 0.04 cfs of 0.22 cfs potential flow)
  ├**4=Orifice/Grate** (Orifice Controls 0.20 cfs @ 4.58 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 222P: CB7

Inflow Area = 0.97 ac, 52.58% Impervious, Inflow Depth > 3.40" for Cumberland_10 event
Inflow = 0.53 cfs @ 12.08 hrs, Volume= 0.275 af
Outflow = 0.53 cfs @ 12.08 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 12.08 hrs, Volume= 0.275 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 121.86' @ 12.08 hrs
Flood Elev= 125.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	121.50'	**12.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.50' / 120.20' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.52 cfs @ 12.08 hrs HW=121.86' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.52 cfs @ 2.05 fps)

Summary for Pond 224P: CB8

Inflow Area = 3.58 ac, 18.72% Impervious, Inflow Depth > 2.71" for Cumberland_10 event
Inflow = 5.33 cfs @ 12.32 hrs, Volume= 0.810 af
Outflow = 5.33 cfs @ 12.32 hrs, Volume= 0.810 af, Atten= 0%, Lag= 0.0 min
Primary = 5.33 cfs @ 12.32 hrs, Volume= 0.810 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 108.66' @ 12.32 hrs
Flood Elev= 111.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.90'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 106.90' / 106.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.33 cfs @ 12.32 hrs HW=108.66' (Free Discharge)
└**1=Culvert** (Barrel Controls 5.33 cfs @ 4.34 fps)

Summary for Pond 225: CB9

Inflow Area = 3.85 ac, 21.82% Impervious, Inflow Depth > 2.78" for Cumberland_10 event
Inflow = 5.74 cfs @ 12.31 hrs, Volume= 0.891 af
Outflow = 5.74 cfs @ 12.31 hrs, Volume= 0.891 af, Atten= 0%, Lag= 0.0 min
Primary = 5.74 cfs @ 12.31 hrs, Volume= 0.891 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 108.33' @ 12.31 hrs
Flood Elev= 111.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.61'	**15.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 106.61' / 106.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.74 cfs @ 12.31 hrs HW=108.33' (Free Discharge)
1=Culvert (Barrel Controls 5.74 cfs @ 4.68 fps)

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge) Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=4.22"
Flow Length=660' Tc=9.9 min CN=86 Runoff=11.06 cfs 0.914 af

Subcatchment 3: Sub 3 Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=4.22"
Flow Length=300' Tc=9.4 min CN=86 Runoff=1.30 cfs 0.105 af

Subcatchment 6: Sub 6 Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=4.01"
Flow Length=235' Tc=5.0 min CN=84 Runoff=2.02 cfs 0.140 af

Subcatchment 11: Sub 11 Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=3.80"
Flow Length=375' Tc=7.3 min CN=82 Runoff=7.96 cfs 0.596 af

Subcatchment 12: Sub 12 Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=3.50"
Flow Length=380' Tc=20.9 min CN=79 Runoff=7.10 cfs 0.762 af

Subcatchment 15: Sub 15 Runoff Area=0.27 ac 62.96% Impervious Runoff Depth=4.76"
Flow Length=342' Tc=5.0 min CN=91 Runoff=1.48 cfs 0.107 af

Subcatchment 15A: Sub 15A Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=4.87"
Flow Length=87' Tc=5.0 min CN=92 Runoff=0.50 cfs 0.037 af

Subcatchment 20: Subarea 2 Runoff Area=6.30 ac 4.65% Impervious Runoff Depth=3.40"
Flow Length=1,435' Tc=32.5 min CN=78 Runoff=13.72 cfs 1.786 af

Subcatchment 21: Sub 21 Runoff Area=3.39 ac 64.01% Impervious Runoff Depth=4.87"
Tc=5.0 min CN=92 Runoff=18.86 cfs 1.377 af

Subcatchment 22: Sub 22 Runoff Area=0.68 ac 66.18% Impervious Runoff Depth=4.87"
Tc=5.0 min CN=92 Runoff=3.78 cfs 0.276 af

Subcatchment 23: Sub 23 Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=3.60"
Tc=5.0 min CN=80 Runoff=0.87 cfs 0.060 af

Subcatchment 40: Sub 40 Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=3.31"
Flow Length=250' Tc=9.8 min CN=77 Runoff=3.82 cfs 0.308 af

Subcatchment 50: Sub 50 Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=3.80"
Flow Length=360' Tc=9.9 min CN=82 Runoff=4.62 cfs 0.377 af

Subcatchment 100: Subarea 100 Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=572' Tc=6.6 min CN=98 Runoff=1.23 cfs 0.102 af

Subcatchment 101S: BASIN 101 (Ocean Ridge) Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=4.65"
Flow Length=155' Tc=6.4 min CN=90 Runoff=0.98 cfs 0.074 af

Subcatchment 300: Subarea 300 Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=5.56"
Flow Length=162' Tc=5.0 min CN=98 Runoff=0.53 cfs 0.042 af

Subcatchment 301S: BASIN 301 (Ocean Ridge) Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=4.43"
Flow Length=190' Tc=9.3 min CN=88 Runoff=3.69 cfs 0.303 af

Subcatchment 302S: BASIN 302 (Ocean Ridge) Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=4.65"
Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=5.97 cfs 0.492 af

Subcatchment 303S: BASIN 3 (Ocean Ridge) Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=3.91"
Flow Length=150' Tc=8.1 min CN=83 Runoff=2.45 cfs 0.189 af

Reach 3R: VEGETATED SWALE 1 (Ocean Ridge) Avg. Flow Depth=0.83' Max Vel=0.79 fps Inflow=5.97 cfs 0.492 af
n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=5.56 cfs 0.492 af

Reach 4R: SP#2 Inflow=3.82 cfs 0.308 af
Outflow=3.82 cfs 0.308 af

Reach 31R: CULVERT 3 (Ocean Ridge) Avg. Flow Depth=0.75' Max Vel=5.29 fps Inflow=3.04 cfs 0.303 af
11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=3.04 cfs 0.303 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge) Avg. Flow Depth=0.63' Max Vel=0.71 fps Inflow=3.69 cfs 0.303 af
n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=3.54 cfs 0.303 af

Reach 33R: Wetland Flow Avg. Flow Depth=0.29' Max Vel=0.87 fps Inflow=3.95 cfs 0.984 af
n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=3.93 cfs 0.984 af

Reach 106R: SP#1 (Eben Hill Road) Inflow=44.17 cfs 7.635 af
Outflow=44.17 cfs 7.635 af

Reach 210R: Woods overland Avg. Flow Depth=0.28' Max Vel=2.94 fps Inflow=13.19 cfs 1.330 af
n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=11.82 cfs 1.330 af

Reach 221R: Access Ditch Avg. Flow Depth=0.38' Max Vel=6.05 fps Inflow=7.10 cfs 0.762 af
n=0.025 L=100.0' S=0.0600 '/' Capacity=51.82 cfs Outflow=7.09 cfs 0.762 af

Reach 223R: Access Ditch Avg. Flow Depth=0.44' Max Vel=6.00 fps Inflow=8.69 cfs 1.128 af
n=0.025 L=210.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=8.68 cfs 1.128 af

Reach 240R: EXISTING CHANNEL Avg. Flow Depth=0.27' Max Vel=4.65 fps Inflow=3.91 cfs 0.983 af
n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=3.90 cfs 0.983 af

Reach 241R: EXISTING CHANNEL Avg. Flow Depth=0.44' Max Vel=7.22 fps Inflow=12.67 cfs 2.313 af
n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=11.99 cfs 2.313 af

Reach 340R: Woodland Flow Avg. Flow Depth=0.21' Max Vel=2.60 fps Inflow=3.93 cfs 0.984 af
n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=3.91 cfs 0.983 af

Pond 3P: POND 3 (Ocean Ridge) Peak Elev=161.33' Storage=13,782 cf Inflow=9.99 cfs 0.984 af
Outflow=3.95 cfs 0.984 af

Pond 30P: POND 30 (Ocean Ridge) Peak Elev=160.88' Storage=1,387 cf Inflow=3.54 cfs 0.303 af
18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=3.04 cfs 0.303 af

Pond 60R: FIELD CB Peak Elev=90.79' Inflow=2.02 cfs 0.140 af
12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=2.02 cfs 0.140 af

Pond 62P: Driveway Culvert Peak Elev=89.88' Storage=1,757 cf Inflow=22.01 cfs 4.240 af
Primary=8.57 cfs 3.381 af Secondary=13.42 cfs 0.859 af Outflow=21.98 cfs 4.240 af

Pond 66P: 24" Cross culvert Peak Elev=88.76' Storage=1,817 cf Inflow=24.30 cfs 4.617 af
Primary=21.74 cfs 4.568 af Secondary=4.22 cfs 0.094 af Outflow=25.96 cfs 4.662 af

Pond 100R: Vortech-DMH2 Peak Elev=112.25' Inflow=18.05 cfs 2.223 af
18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=18.05 cfs 2.223 af

Pond 101R: DMH2-DMH1(DMH1606) Peak Elev=103.63' Inflow=18.05 cfs 2.223 af
18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=18.05 cfs 2.223 af

Pond 102R: DMH1606-DMH9 Peak Elev=96.55' Inflow=18.05 cfs 2.223 af
18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=18.05 cfs 2.223 af

Pond 103R: DMH9-DMH8 Peak Elev=101.95' Inflow=26.79 cfs 2.920 af
18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=26.79 cfs 2.920 af

Pond 104R: DMH8-DMH200 Peak Elev=111.36' Inflow=28.51 cfs 3.068 af
18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=28.51 cfs 3.068 af

Pond 105R: DMH200-OUTLET Peak Elev=98.51' Inflow=28.51 cfs 3.068 af
18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=28.51 cfs 3.068 af

Pond 210P: Sand Filter mc3500 Peak Elev=130.44' Storage=23,079 cf Inflow=18.86 cfs 1.377 af
Outflow=13.19 cfs 1.330 af

Pond 220P: UDF Peak Elev=127.17' Storage=6,839 cf Inflow=4.65 cfs 0.336 af
Primary=1.49 cfs 0.330 af Secondary=0.00 cfs 0.000 af Outflow=1.49 cfs 0.330 af

Pond 222P: CB7 Peak Elev=122.20' Inflow=1.65 cfs 0.366 af
12.0" Round Culvert n=0.013 L=123.0' S=0.0106 '/' Outflow=1.65 cfs 0.366 af

Pond 224P: CB8 Peak Elev=109.81' Inflow=8.68 cfs 1.128 af
15.0" Round Culvert n=0.013 L=38.0' S=0.0050 '/' Outflow=8.68 cfs 1.128 af

Pond 225: CB9 Peak Elev=109.66' Inflow=9.20 cfs 1.235 af
15.0" Round Culvert n=0.013 L=21.0' S=0.0100 '/' Outflow=9.20 cfs 1.235 af

Total Runoff Area = 24.22 ac Runoff Volume = 8.047 af Average Runoff Depth = 3.99"
72.64% Pervious = 17.59 ac 27.36% Impervious = 6.63 ac

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 11.06 cfs @ 12.13 hrs, Volume= 0.914 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.90	98	IMPERVIOUS
*	0.38	77	WOODS D
*	1.32	80	LAWN D
	2.60	86	Weighted Average
	1.70		65.38% Pervious Area
	0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, OVERLAND FLOW** Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	**Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch** Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 1.30 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.04	98	Paved roads Ocean Ave
	0.26	84	1 acre lots, 20% imp, HSG D
	0.30	86	Weighted Average
	0.21		69.33% Pervious Area
	0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		**Shallow Concentrated Flow, B-C**
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		**Shallow Concentrated Flow, C-D**
					Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	**Trap/Vee/Rect Channel Flow, C-D**
					Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00'
					n= 0.035
0.9					**Direct Entry,**
5.0	235	Total			

Summary for Subcatchment 11: Sub 11

Runoff = 7.96 cfs @ 12.10 hrs, Volume= 0.596 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	1.04	77	Woods, Good, HSG D
*	0.19	98	Paved roads Ocean Ave
*	0.05	98	Paved roads, Site Drive
	0.02	80	>75% Grass cover, Good, HSG D
	0.29	84	1 acre lots, 20% imp, HSG D
	0.29	87	1/4 acre lots, 38% imp, HSG D
	1.88	82	Weighted Average
	1.47		78.29% Pervious Area
	0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 7.10 cfs @ 12.28 hrs, Volume= 0.762 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	2.01	77	Woods, Good, HSG D
	0.18	80	>75% Grass cover, Good, HSG D
*	0.04	98	Paved roads OCEAN AVE
*	0.07	98	Roofs, OCEAN RIDGE
*	0.05	98	Paved roads Ocean Ridge
*	0.03	77	Woods, Good, HSG D Ocean Ridge
*	0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
	2.61	79	Weighted Average
	2.45		93.87% Pervious Area
	0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
20.9	380	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.107 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.17	98	Paved roads Site Drive
	0.10	80	>75% Grass cover, Good, HSG D
	0.27	91	Weighted Average
	0.10		37.04% Pervious Area
	0.17		62.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
3.6					**Direct Entry, C-D**
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.50 cfs @ 12.07 hrs, Volume= 0.037 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.06	98	Paved roads Site Drive
	0.03	80	>75% Grass cover, Good, HSG D
	0.09	92	Weighted Average
	0.03		33.33% Pervious Area
	0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		**Shallow Concentrated Flow, B-C**
					Paved Kv= 20.3 fps
4.5					**Direct Entry, C-D**
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 13.72 cfs @ 12.46 hrs, Volume= 1.786 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.64	87	1/4 acre lots, 38% imp, HSG D
	0.12	80	>75% Grass cover, Good, HSG D
*	0.05	98	Roadway, Ocean Ave
	5.49	77	Woods, Good, HSG D
	6.30	78	Weighted Average
	6.01		95.35% Pervious Area
	0.29		4.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		**Sheet Flow, Overland Woods** Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		**Shallow Concentrated Flow, Overland Woods** Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 18.86 cfs @ 12.07 hrs, Volume= 1.377 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	1.22	80	>75% Grass cover, Good, HSG D
*	2.17	98	Site Development
	3.39	92	Weighted Average
	1.22		35.99% Pervious Area
	2.17		64.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 22: Sub 22

Runoff = 3.78 cfs @ 12.07 hrs, Volume= 0.276 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.45	98	Site Development
0.23	80	>75% Grass cover, Good, HSG D
0.68	92	Weighted Average
0.23		33.82% Pervious Area
0.45		66.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 23: Sub 23

Runoff = 0.87 cfs @ 12.07 hrs, Volume= 0.060 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 40: Sub 40

Runoff = 3.82 cfs @ 12.14 hrs, Volume= 0.308 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		**Sheet Flow, A-B**
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		**Shallow Concentrated Flow, B-C**
					Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 4.62 cfs @ 12.14 hrs, Volume= 0.377 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
	0.34	77	Woods, Good, HSG D
	0.09	80	>75% Grass cover, Good, HSG D
*	0.03	98	Paved roads Ocean Ave
	0.73	84	1 acre lots, 20% imp, HSG D
	1.19	82	Weighted Average
	1.01		85.21% Pervious Area
	0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.22	98	Roadway
	0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		**Shallow Concentrated Flow, SHALLOW RD DITCH** Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		**Shallow Concentrated Flow, ROAD GUTTER** Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.11	98	IMPERVIOUS
* 0.08	80	LAWN D
0.19	90	Weighted Average
0.08		42.11% Pervious Area
0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		**Sheet Flow, Segment ID: AB, Lawn** Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC,Driveway** Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		**Shallow Concentrated Flow, Segment ID: grass slope** Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.09	98	Roadway
0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		**Sheet Flow, Road Crown** Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		**Shallow Concentrated Flow, Gutter flow** Paved Kv= 20.3 fps
3.7					**Direct Entry,**
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.37	98	IMPERVIOUS
*	0.45	80	LAWN D
	0.82	88	Weighted Average
	0.45		54.88% Pervious Area
	0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: CD** Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.74	98	IMPERVIOUS
*	0.05	77	WOODS D
*	0.48	80	LAWN D
	1.27	90	Weighted Average
	0.53		41.73% Pervious Area
	0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		**Sheet Flow, Segment ID: AB** Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		**Shallow Concentrated Flow, Segment ID: BC** Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		**Shallow Concentrated Flow, Segment ID:** Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 2.45 cfs @ 12.11 hrs, Volume= 0.189 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

	Area (ac)	CN	Description
*	0.12	98	IMPERVIOUS
*	0.08	77	WOODS D
*	0.38	80	LAWN D
	0.58	83	Weighted Average
	0.46		79.31% Pervious Area
	0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		**Sheet Flow, Segment ID: AB** Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		**Shallow Concentrated Flow, Segment ID: BC** Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 4.65" for Cumberland_25 event
Inflow = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af
Outflow = 5.56 cfs @ 12.22 hrs, Volume= 0.492 af, Atten= 7%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.79 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 13.6 min

Peak Storage= 1,192 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 170.0' Slope= 0.0120 '/'
Inlet Invert= 0.00', Outlet Invert= -2.04'



‡

Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 3.31" for Cumberland_25 event
Inflow = 3.82 cfs @ 12.14 hrs, Volume= 0.308 af
Outflow = 3.82 cfs @ 12.14 hrs, Volume= 0.308 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

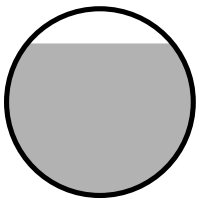
Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af
Outflow = 3.04 cfs @ 12.28 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 5.29 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 0.6 min

Peak Storage= 29 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.75'
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe
n= 0.012
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af
Outflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af, Atten= 4%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.71 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 10.1 min

Peak Storage= 574 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



‡

Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
Inflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af
Outflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af, Atten= 0%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 9.8 min

Peak Storage= 680 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



‡

Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.68% Impervious, Inflow Depth > 3.97" for Cumberland_25 event
Inflow = 44.17 cfs @ 12.14 hrs, Volume= 7.635 af
Outflow = 44.17 cfs @ 12.14 hrs, Volume= 7.635 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 210R: Woods overland

Inflow Area = 3.39 ac, 64.01% Impervious, Inflow Depth > 4.71" for Cumberland_25 event
Inflow = 13.19 cfs @ 12.16 hrs, Volume= 1.330 af
Outflow = 11.82 cfs @ 12.17 hrs, Volume= 1.330 af, Atten= 10%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.94 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 1.1 min

Peak Storage= 215 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 30.00'
Length= 50.0' Slope= 0.0400 '/'
Inlet Invert= 112.00', Outlet Invert= 110.00'



‡

Summary for Reach 221R: Access Ditch

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 3.50" for Cumberland_25 event
Inflow = 7.10 cfs @ 12.28 hrs, Volume= 0.762 af
Outflow = 7.09 cfs @ 12.29 hrs, Volume= 0.762 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.05 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.12 fps, Avg. Travel Time= 0.8 min

Peak Storage= 117 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 51.82 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 100.0' Slope= 0.0600 '/'
Inlet Invert= 127.00', Outlet Invert= 121.00'



‡

Summary for Reach 223R: Access Ditch

Inflow Area = 3.58 ac, 18.72% Impervious, Inflow Depth > 3.78" for Cumberland_25 event
Inflow = 8.69 cfs @ 12.30 hrs, Volume= 1.128 af
Outflow = 8.68 cfs @ 12.32 hrs, Volume= 1.128 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.00 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.52 fps, Avg. Travel Time= 2.3 min

Peak Storage= 304 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0500 '/'
Inlet Invert= 121.00', Outlet Invert= 110.50'



‡

Summary for Reach 240R: EXISTING CHANNEL

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
Inflow = 3.91 cfs @ 12.80 hrs, Volume= 0.983 af
Outflow = 3.90 cfs @ 12.84 hrs, Volume= 0.983 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.65 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 4.1 min

Peak Storage= 286 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 340.0' Slope= 0.0529 '/'
Inlet Invert= 128.00', Outlet Invert= 110.00'



‡

Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 6.06 ac, 56.11% Impervious, Inflow Depth > 4.58" for Cumberland_25 event
Inflow = 12.67 cfs @ 12.17 hrs, Volume= 2.313 af
Outflow = 11.99 cfs @ 12.19 hrs, Volume= 2.313 af, Atten= 5%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.22 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.29 fps, Avg. Travel Time= 2.2 min

Peak Storage= 500 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 10.00'
Length= 300.0' Slope= 0.0750 '/'
Inlet Invert= 110.00', Outlet Invert= 87.50'



‡

Summary for Reach 340R: Woodland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
Inflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af
Outflow = 3.91 cfs @ 12.80 hrs, Volume= 0.983 af, Atten= 1%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 4.5 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 14.8 min

Peak Storage= 1,053 cf @ 12.72 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25.00'
Length= 700.0' Slope= 0.0421 '/'
Inlet Invert= 157.50', Outlet Invert= 128.00'



‡

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
Inflow = 9.99 cfs @ 12.22 hrs, Volume= 0.984 af
Outflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af, Atten= 61%, Lag= 21.4 min
Primary = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 161.33' @ 12.58 hrs Surf.Area= 5,928 sf Storage= 13,782 cf

Plug-Flow detention time= 71.1 min calculated for 0.984 af (100% of inflow)
Center-of-Mass det. time= 70.6 min (880.9 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	160.00'	**9.0" Vert. Orifice/Grate** C= 0.600
#3	Primary	161.00'	**4.5" Vert. Orifice/Grate** C= 0.600
#4	Primary	161.50'	**20.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=3.95 cfs @ 12.58 hrs HW=161.33' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.66 cfs @ 8.46 fps)
- **2=Orifice/Grate** (Orifice Controls 2.08 cfs @ 4.71 fps)
- **3=Orifice/Grate** (Orifice Controls 0.20 cfs @ 1.97 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
Inflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af
Outflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af, Atten= 14%, Lag= 4.1 min
Primary = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 160.88' @ 12.27 hrs Surf.Area= 1,526 sf Storage= 1,387 cf

Plug-Flow detention time= 22.7 min calculated for 0.303 af (100% of inflow)
Center-of-Mass det. time= 22.6 min (827.1 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	**18.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.04 cfs @ 12.27 hrs HW=160.88' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.04 cfs @ 4.07 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 4.01" for Cumberland_25 event
Inflow = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af
Outflow = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 90.79' @ 12.07 hrs
Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	**12.0" Round Culvert** L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.02 cfs @ 12.07 hrs HW=90.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.02 cfs @ 3.03 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.78 ac, 29.65% Impervious, Inflow Depth > 3.98" for Cumberland_25 event
Inflow = 22.01 cfs @ 12.38 hrs, Volume= 4.240 af
Outflow = 21.98 cfs @ 12.40 hrs, Volume= 4.240 af, Atten= 0%, Lag= 0.6 min
Primary = 8.57 cfs @ 12.40 hrs, Volume= 3.381 af
Secondary = 13.42 cfs @ 12.40 hrs, Volume= 0.859 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 89.88' @ 12.40 hrs Surf.Area= 3,288 sf Storage= 1,757 cf

Plug-Flow detention time= 0.9 min calculated for 4.239 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (912.0 - 911.2)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	**22.0' long x 13.0' 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) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.57 cfs @ 12.40 hrs HW=89.88' (Free Discharge)
1=Culvert (Inlet Controls 8.57 cfs @ 4.85 fps)

Secondary OutFlow Max=13.41 cfs @ 12.40 hrs HW=89.88' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 13.41 cfs @ 1.62 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.97 ac, 28.39% Impervious, Inflow Depth > 3.97" for Cumberland_25 event
Inflow = 24.30 cfs @ 12.22 hrs, Volume= 4.617 af
Outflow = 25.96 cfs @ 12.35 hrs, Volume= 4.662 af, Atten= 0%, Lag= 8.0 min
Primary = 21.74 cfs @ 12.35 hrs, Volume= 4.568 af
Secondary = 4.22 cfs @ 12.35 hrs, Volume= 0.094 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6
Peak Elev= 88.76' @ 12.35 hrs Surf.Area= 1,850 sf Storage= 1,817 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	**24.0" Round Culvert** L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	**12.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=21.74 cfs @ 12.35 hrs HW=88.76' (Free Discharge)
└**1=Culvert** (Inlet Controls 21.74 cfs @ 6.92 fps)

Secondary OutFlow Max=4.22 cfs @ 12.35 hrs HW=88.76' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 4.22 cfs @ 1.33 fps)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 4.02" for Cumberland_25 event
Inflow = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af
Outflow = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af, Atten= 0%, Lag= 0.0 min
Primary = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 112.25' @ 12.14 hrs
Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=18.05 cfs @ 12.14 hrs HW=112.25' (Free Discharge)
└**1=Culvert** (Inlet Controls 18.05 cfs @ 10.21 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 4.02" for Cumberland_25 event
Inflow = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af
Outflow = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af, Atten= 0%, Lag= 0.0 min
Primary = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 103.63' @ 12.14 hrs
Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	**18.0" Round Culvert** L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=18.05 cfs @ 12.14 hrs HW=103.63' (Free Discharge)
└**1=Culvert** (Inlet Controls 18.05 cfs @ 10.21 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 6.64 ac, 27.86% Impervious, Inflow Depth > 4.02" for Cumberland_25 event
Inflow = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af
Outflow = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af, Atten= 0%, Lag= 0.0 min
Primary = 18.05 cfs @ 12.14 hrs, Volume= 2.223 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 96.55' @ 12.14 hrs
Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	**18.0" Round Culvert** L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=18.05 cfs @ 12.14 hrs HW=96.55' (Free Discharge)
1=Culvert (Inlet Controls 18.05 cfs @ 10.21 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.74 ac, 28.35% Impervious, Inflow Depth > 4.01" for Cumberland_25 event
Inflow = 26.79 cfs @ 12.12 hrs, Volume= 2.920 af
Outflow = 26.79 cfs @ 12.12 hrs, Volume= 2.920 af, Atten= 0%, Lag= 0.0 min
Primary = 26.79 cfs @ 12.12 hrs, Volume= 2.920 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 101.95' @ 12.12 hrs
Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	**18.0" Round Culvert** L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=26.77 cfs @ 12.12 hrs HW=101.94' (Free Discharge)
1=Culvert (Barrel Controls 26.77 cfs @ 15.15 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.13 ac, 29.14% Impervious, Inflow Depth > 4.03" for Cumberland_25 event
Inflow = 28.51 cfs @ 12.12 hrs, Volume= 3.068 af
Outflow = 28.51 cfs @ 12.12 hrs, Volume= 3.068 af, Atten= 0%, Lag= 0.0 min
Primary = 28.51 cfs @ 12.12 hrs, Volume= 3.068 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 111.36' @ 12.12 hrs
Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	**18.0" Round Culvert** L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=28.51 cfs @ 12.12 hrs HW=111.35' (Free Discharge)
1=Culvert (Barrel Controls 28.51 cfs @ 16.13 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.13 ac, 29.14% Impervious, Inflow Depth > 4.03" for Cumberland_25 event
Inflow = 28.51 cfs @ 12.12 hrs, Volume= 3.068 af
Outflow = 28.51 cfs @ 12.12 hrs, Volume= 3.068 af, Atten= 0%, Lag= 0.0 min
Primary = 28.51 cfs @ 12.12 hrs, Volume= 3.068 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 98.51' @ 12.12 hrs
Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=28.51 cfs @ 12.12 hrs HW=98.51' (Free Discharge)
1=Culvert (Inlet Controls 28.51 cfs @ 16.13 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.39 ac, 64.01% Impervious, Inflow Depth = 4.87" for Cumberland_25 event
Inflow = 18.86 cfs @ 12.07 hrs, Volume= 1.377 af
Outflow = 13.19 cfs @ 12.16 hrs, Volume= 1.330 af, Atten= 30%, Lag= 5.3 min
Primary = 13.19 cfs @ 12.16 hrs, Volume= 1.330 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 130.44' @ 12.16 hrs Surf.Area= 6,773 sf Storage= 23,079 cf

Plug-Flow detention time= 256.5 min calculated for 1.330 af (97% of inflow)
Center-of-Mass det. time= 236.3 min (1,013.5 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	**80.08'W x 84.57'L x 5.50'H Field A** 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	**ADS_StormTech MC-3500 d +Cap** x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.87'	**1.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Device 1	126.80'	**7.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	129.87'	**6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=12.82 cfs @ 12.16 hrs HW=130.42' (Free Discharge)
└**1=Culvert** (Passes 12.82 cfs of 17.52 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.15 cfs @ 14.04 fps)
  ├**3=Orifice/Grate** (Orifice Controls 4.69 cfs @ 8.78 fps)
  └**4=Sharp-Crested Vee/Trap Weir** (Weir Controls 7.98 cfs @ 2.42 fps)

Summary for Pond 220P: UDF

Inflow Area = 0.88 ac, 51.14% Impervious, Inflow Depth = 4.58" for Cumberland_25 event
Inflow = 4.65 cfs @ 12.07 hrs, Volume= 0.336 af
Outflow = 1.49 cfs @ 12.36 hrs, Volume= 0.330 af, Atten= 68%, Lag= 17.2 min
Primary = 1.49 cfs @ 12.36 hrs, Volume= 0.330 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 127.17' @ 12.36 hrs Surf.Area= 4,135 sf Storage= 6,839 cf

Plug-Flow detention time= 374.3 min calculated for 0.330 af (98% of inflow)
Center-of-Mass det. time= 362.2 min (1,146.1 - 783.9)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	**12.0" Round Culvert** L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	**0.9" Vert. Orifice/Grate** C= 0.600
#3	Device 2	125.00'	**2.400 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	**2.0" Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 1	127.00'	**20.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	127.50'	**10.0' long x 8.0' 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.49 cfs @ 12.36 hrs HW=127.17' (Free Discharge)
└**1=Culvert** (Passes 1.49 cfs of 6.57 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 9.99 fps)
  │ └**3=Exfiltration** (Passes 0.04 cfs of 0.23 cfs potential flow)
  ├**4=Orifice/Grate** (Orifice Controls 0.22 cfs @ 5.03 fps)
  └**5=Orifice/Grate** (Weir Controls 1.23 cfs @ 1.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 222P: CB7

Inflow Area = 0.97 ac, 52.58% Impervious, Inflow Depth > 4.53" for Cumberland_25 event
Inflow = 1.65 cfs @ 12.35 hrs, Volume= 0.366 af
Outflow = 1.65 cfs @ 12.35 hrs, Volume= 0.366 af, Atten= 0%, Lag= 0.0 min
Primary = 1.65 cfs @ 12.35 hrs, Volume= 0.366 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 122.20' @ 12.35 hrs
Flood Elev= 125.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	121.50'	**12.0" Round Culvert** L= 123.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.50' / 120.20' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.65 cfs @ 12.35 hrs HW=122.20' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.65 cfs @ 2.84 fps)

Summary for Pond 224P: CB8

Inflow Area = 3.58 ac, 18.72% Impervious, Inflow Depth > 3.78" for Cumberland_25 event
Inflow = 8.68 cfs @ 12.32 hrs, Volume= 1.128 af
Outflow = 8.68 cfs @ 12.32 hrs, Volume= 1.128 af, Atten= 0%, Lag= 0.0 min
Primary = 8.68 cfs @ 12.32 hrs, Volume= 1.128 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 109.81' @ 12.32 hrs
Flood Elev= 111.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.90'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 106.90' / 106.71' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=8.68 cfs @ 12.32 hrs HW=109.81' (Free Discharge)
└**1=Culvert** (Barrel Controls 8.68 cfs @ 7.07 fps)

Summary for Pond 225: CB9

Inflow Area = 3.85 ac, 21.82% Impervious, Inflow Depth > 3.85" for Cumberland_25 event
Inflow = 9.20 cfs @ 12.32 hrs, Volume= 1.235 af
Outflow = 9.20 cfs @ 12.32 hrs, Volume= 1.235 af, Atten= 0%, Lag= 0.0 min
Primary = 9.20 cfs @ 12.32 hrs, Volume= 1.235 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Peak Elev= 109.66' @ 12.32 hrs
Flood Elev= 111.13'

Device	Routing	Invert	Outlet Devices
#1	Primary	106.61'	**15.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 106.61' / 106.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=9.20 cfs @ 12.32 hrs HW=109.66' (Free Discharge)
↑**1=Culvert** (Inlet Controls 9.20 cfs @ 7.50 fps)

Attachment C

Inspection, Maintenance and Housekeeping Plan

Revised 11/30/15

14432

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

Portland Retirement Residence
Portland, ME

Introduction

Upon completion of the proposed development, Hawthorne Development Group, LLC (or a subsidiary of) 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. <u>Sediment Barriers:</u>

   - 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. Ditches, Swales and Other Open Channels:
      - Inspect ditches, swales, and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to the flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow and repair any erosion of the ditch lining.
      - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
      - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
      - Replace riprap in areas where any underlying filter fabric or underlying gravel is showing through the stone or where stones have dislodged.

   C. Level Lip Spreaders/Ditch Turnouts:
      - The level lip spreader pool shall be inspected after significant rainfall events for sediment accumulation and debris that may reduce its capacity. Sediment and debris buildup shall be removed once the volume of the pool has been reduced by 25%.

- The level lip must be constructed so that runoff flows slowly over the lip to a sheet flow condition through the receiving area. Repair or reconstruction of the level lip is required when the flow from the spreader becomes channelized.
- Do not store snow removed from the street/parking lot within the area of the level spreader.

D. Winter Sanding:
- 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 or other acceptable method.

E. 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

F. Underdrained Subsurface Sand Filter
- Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repaired when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand may need to be replaced every 3 to 5 years.

G. Stormtech Chambers/Isolator Row:
   - Stormtech Chambers shall be inspected and maintained according to manufacturer's recommendations.
   - Recommended maintenance includes, but not limited to, visual inspection of accumulated sediment within isolator row and jet-vac flushing when required.

H. 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.

I. Culverts:
   - Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
   - Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
   - Inspect and repair any erosion damage at the culvert's inlet and outlet.
   - Inspect embankment for erosion, settling, and structural failure.

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

14432

Sample Stormwater Inspection and Maintenance Form

Portland Retirement Residence; Portland, ME
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
Ditches and Swales	Inspect after major rainfall event producing greater than 3" of rain in 2 hours.			
	Repair erosion or damage immediately.			
Catch Basins and Culverts	Remove accumulated sediment and debris			
	Sump depth			
Vegetated Areas	Inspect Slopes			
	Replant Bare Areas			
	Check after Major Storms			
Winter Sanding	Clean annually (Spring)			
	Remove sand and sediment from roadway shoulders			
Level Lip Spreaders	Inspect after significant rainfall			
	Remove sediment if pool volume reduced by 25%			
	Repair the riprap if flow become s channelized			
Subsurface Sand Filter	Inspect system thru inspection ports following major storm event			
	Remove sediment/debris from inlet structure annually			
Underdrained Grass Filter	Inspect inlets/outlets to ensure no blockage from debris			
	Inspect sideslopes annually for erosion, destabilization, and embankment settling.			

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Stormtech	Follow manufacturer's recommendations			

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Pond 66P: 24" Cross culvert - 14432_Postdevelopment_AS BUILT

Summary Hydrograph Discharge Storage Events Sizing

Time	Inflow	Outflow	Primary	Secondary
12.01	9.24	9.15	9.15	0.00
12.02	9.57	9.46	9.46	0.00
12.03	9.92	9.80	9.80	0.00
12.04	10.30	10.15	10.15	0.00
12.05	10.68	10.51	10.51	0.00
12.06	11.31	11.01	11.01	0.00
12.07	12.40	11.81	11.81	0.00
12.08	13.44	12.65	12.65	0.00
12.09	14.33	13.34	13.34	0.00
12.10	15.05	13.97	13.97	0.00
12.11	15.66	14.52	14.52	0.00
12.12	16.15	15.00	15.00	0.00
12.13	16.58	15.42	15.42	0.00
12.14	16.94	15.78	15.78	0.00
12.15	17.25	16.10	16.10	0.00
12.16	17.51	16.39	16.39	0.00
12.17	17.75	16.65	16.65	0.00
12.18	18.03	16.89	16.89	0.00
12.19	18.40	17.13	17.13	0.00
12.20	18.93	17.39	17.39	0.00
12.21	19.59	17.69	17.69	0.00
12.22	20.31	18.02	18.02	0.00
12.23	21.02	18.37	18.37	0.00
12.24	21.65	18.73	18.73	0.00
12.25	22.19	19.08	19.08	0.00
12.26	22.63	19.41	19.41	0.00
12.27	22.99	19.72	19.72	0.00
12.28	23.27	20.01	20.01	0.00
12.29	23.50	20.27	20.27	0.00
12.30	23.67	20.51	20.51	0.00
12.31	23.81	20.73	20.73	0.00
12.32	23.92	23.63	21.43	2.20
12.33	23.99	23.71	21.45	2.26
12.34	24.03	23.75	21.45	2.30
12.35	24.06	23.78	21.46	2.32
12.36	**24.07**	**23.78**	**21.46**	**2.33**
12.37	24.06	23.77	21.46	2.32
12.38	24.04	23.76	21.45	2.30
12.39	24.02	23.73	21.45	2.28
12.40	23.97	23.68	21.44	2.24
12.41	23.90	23.61	21.43	2.18
12.42	23.82	23.54	21.42	2.12
12.43	23.74	23.45	21.41	2.04
12.44	23.65	23.36	21.39	1.97
12.45	23.55	23.27	21.38	1.89
12.46	23.46	23.17	21.36	1.81

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Att. DD

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Stormtech

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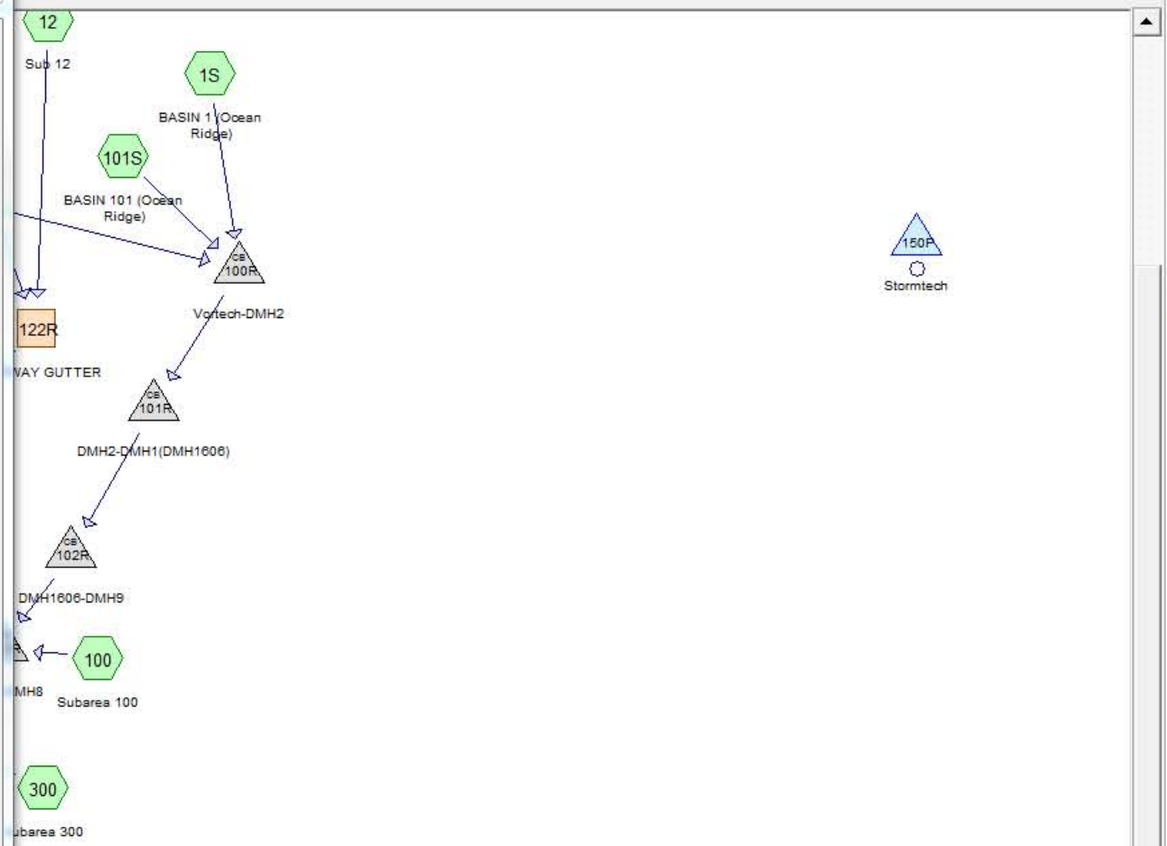
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Pond 105R: DMH200-OUTLET - 14432_Postdevelopment_AS BUILT

Summary | Hydrograph | Discharge | Events | Sizing

Time	Inflow	Outflow	Primary
12.01	17.54	17.54	17.54
12.02	18.81	18.81	18.81
12.03	20.19	20.19	20.19
12.04	21.64	21.64	21.64
12.05	23.10	23.10	23.10
12.06	24.51	24.51	24.51
12.07	25.81	25.81	25.81
12.08	26.94	26.94	26.94
12.09	27.87	27.87	27.87
12.10	28.53	28.53	28.53
12.11	28.97	28.97	28.97
12.12	**29.12**	**29.12**	**29.12**
12.13	29.07	29.07	29.07
12.14	28.79	28.79	28.79
12.15	28.36	28.36	28.36
12.16	27.82	27.82	27.82
12.17	27.20	27.20	27.20
12.18	26.57	26.57	26.57
12.19	25.91	25.91	25.91
12.20	25.30	25.30	25.30
12.21	24.71	24.71	24.71
12.22	24.18	24.18	24.18
12.23	23.69	23.69	23.69
12.24	23.25	23.25	23.25
12.25	22.84	22.84	22.84
12.26	22.47	22.47	22.47
12.27	22.12	22.12	22.12
12.28	21.78	21.78	21.78
12.29	21.47	21.47	21.47
12.30	21.14	21.14	21.14
12.31	20.83	20.83	20.83
12.32	20.51	20.51	20.51
12.33	20.20	20.20	20.20
12.34	19.87	19.87	19.87
12.35	19.54	19.54	19.54
12.36	19.20	19.20	19.20
12.37	18.86	18.86	18.86
12.38	18.51	18.51	18.51
12.39	18.15	18.15	18.15
12.40	17.79	17.79	17.79
12.41	17.41	17.41	17.41
12.42	17.05	17.05	17.05
12.43	16.66	16.66	16.66
12.44	16.29	16.29	16.29
12.45	15.90	15.90	15.90
12.46	15.52	15.52	15.52
12.47	15.13	15.13	15.13

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Reach 106R: SP#1 (Eben Hill Road) - 14432_Postdevelopment_AS BUILT

Summary | Hydrograph | Discharge | Storage | Events

Time	Inflow	Outflow
12.01	26.69	26.69
12.02	28.27	28.27
12.03	29.98	29.98
12.04	31.79	31.79
12.05	33.61	33.61
12.06	35.53	35.53
12.07	37.62	37.62
12.08	39.59	39.59
12.09	41.20	41.20
12.10	42.49	42.49
12.11	43.49	43.49
12.12	44.12	44.12
12.13	44.48	44.48
12.14	**44.57**	**44.57**
12.15	44.47	44.47
12.16	44.22	44.22
12.17	43.86	43.86
12.18	43.46	43.46
12.19	43.05	43.05
12.20	42.69	42.69
12.21	42.40	42.40
12.22	42.20	42.20
12.23	42.06	42.06
12.24	41.98	41.98
12.25	41.92	41.92
12.26	41.88	41.88
12.27	41.84	41.84
12.28	41.79	41.79
12.29	41.74	41.74
12.30	41.66	41.66
12.31	41.57	41.57
12.32	41.95	41.95
12.33	41.65	41.65
12.34	41.32	41.32
12.35	41.00	41.00
12.36	40.66	40.66
12.37	40.32	40.32
12.38	39.96	39.96
12.39	39.60	39.60
12.40	39.23	39.23
12.41	38.84	38.84
12.42	38.46	38.46
12.43	38.07	38.07
12.44	37.68	37.68
12.45	37.28	37.28
12.46	36.88	36.88
12.47	36.48	36.48

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12 Sub 12

1S BASIN 1 (Ocean Ridge)

101S BASIN 101 (Ocean Ridge)

cs 100R Vortech-DMH2

150P Stormtech

122R ADWAY GUTTER

cs 101R DMH2-DMH1(DMH1606)

cs 102R DMH1606-DMH9

cs 103R

100 Subarea 100

300 Subarea 300

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Time (hours)	105R Outflow (cfs)	66P Outflow (cfs)	Total	106R Inflow (cfs)
12.1	28.53	13.97	42.5	42.49
12.11	28.97	14.52	43.49	43.49
12.12	29.12	15	44.12	44.12
12.13	29.07	15.42	44.49	44.48
12.14	28.79	15.78	44.57	44.57
12.15	28.36	16.1	44.46	44.47

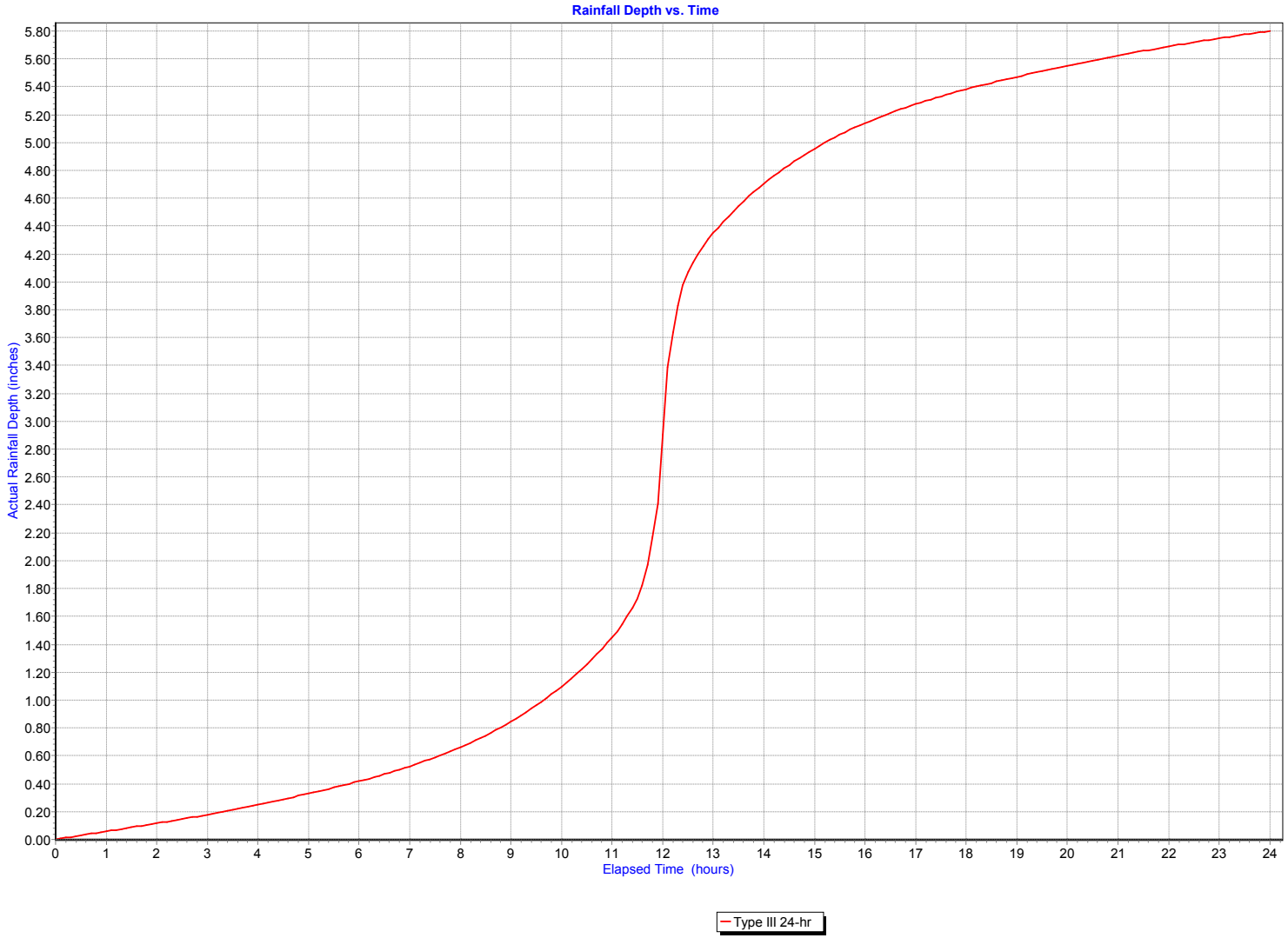
APPENDIX H. 24-hour duration rainfalls for various return periods

COUNTY	Storm Type	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR	500-YR
ANDROSCOGGIN	III	2.5	3.0	3.7	4.3	5.4	6.4	7.6	11.1
AROOSTOOK C (Presque Isle Area)	II	1.9	2.3	2.8	3.2	3.9	4.6	5.3	7.6
AROOSTOOK N (Fort Kent Area)	II	1.9	2.2	2.7	3.1	3.7	4.3	5.0	7.0
AROOSTOOK S (Houlton Area)	II	2.1	2.5	3.0	3.4	4.1	4.7	5.4	7.5
CUMBERLAND NW (Bridgton Area)	III	2.5	3.0	3.7	4.3	5.4	6.3	7.5	10.9
CUMBERLAND SE (N Windham Area)	III	2.6	3.1	3.9	4.6	5.8	6.9	8.1	12.1
FRANKLIN	II	2.0	2.4	2.9	3.4	4.2	4.9	5.7	8.2
HANCOCK	III	2.5	2.9	3.6	4.2	5.2	6.1	7.2	10.5
KENNEBEC	III	2.4	2.8	3.5	4.2	5.2	6.1	7.2	10.6
KNOX	III	2.6	3.2	3.9	4.6	5.7	6.7	7.9	11.5
LINCOLN	III	2.5	3.1	3.8	4.5	5.5	6.5	7.6	11.1
OXFORD E (Rumford Area)	II[1]	2.3	2.7	3.3	3.9	4.8	5.7	6.7	9.7
OXFORD W (Gilead Area)	II	2.2	2.7	3.4	4.0	4.9	5.8	6.9	10.1
PENOBSCOT N (Millinocket Area)	II	2.2	2.6	3.2	3.8	4.7	5.6	6.5	9.5
PENOBSCOT S (Hudson Area)	II	2.3	2.7	3.4	3.9	4.9	5.7	6.7	9.7
PISCATAQUIS N (Chesuncook Area)	II	2.0	2.4	2.9	3.4	4.2	5.0	5.8	8.5
PISCATAQUIS S (Monson Area)	II	2.2	2.7	3.3	3.9	4.8	5.7	6.8	10.0
SAGADAHOC	III	2.6	3.2	3.9	4.6	5.7	6.7	7.8	11.4
SOMERSET N (Pittston Farm Area)	II	2.0	2.3	2.8	3.3	4.0	4.7	5.4	7.8
SOMERSET S (Solon Area)	II	2.3	2.7	3.4	3.9	4.9	5.7	6.7	9.8
WALDO	III	2.4	2.9	3.6	4.2	5.2	6.1	7.2	10.5
WASHINGTON	III	2.5	2.8	3.4	3.9	4.8	5.5	6.4	9.0
YORK	III	2.6	3.3	4.1	4.9	6.2	7.3	8.7	13.2

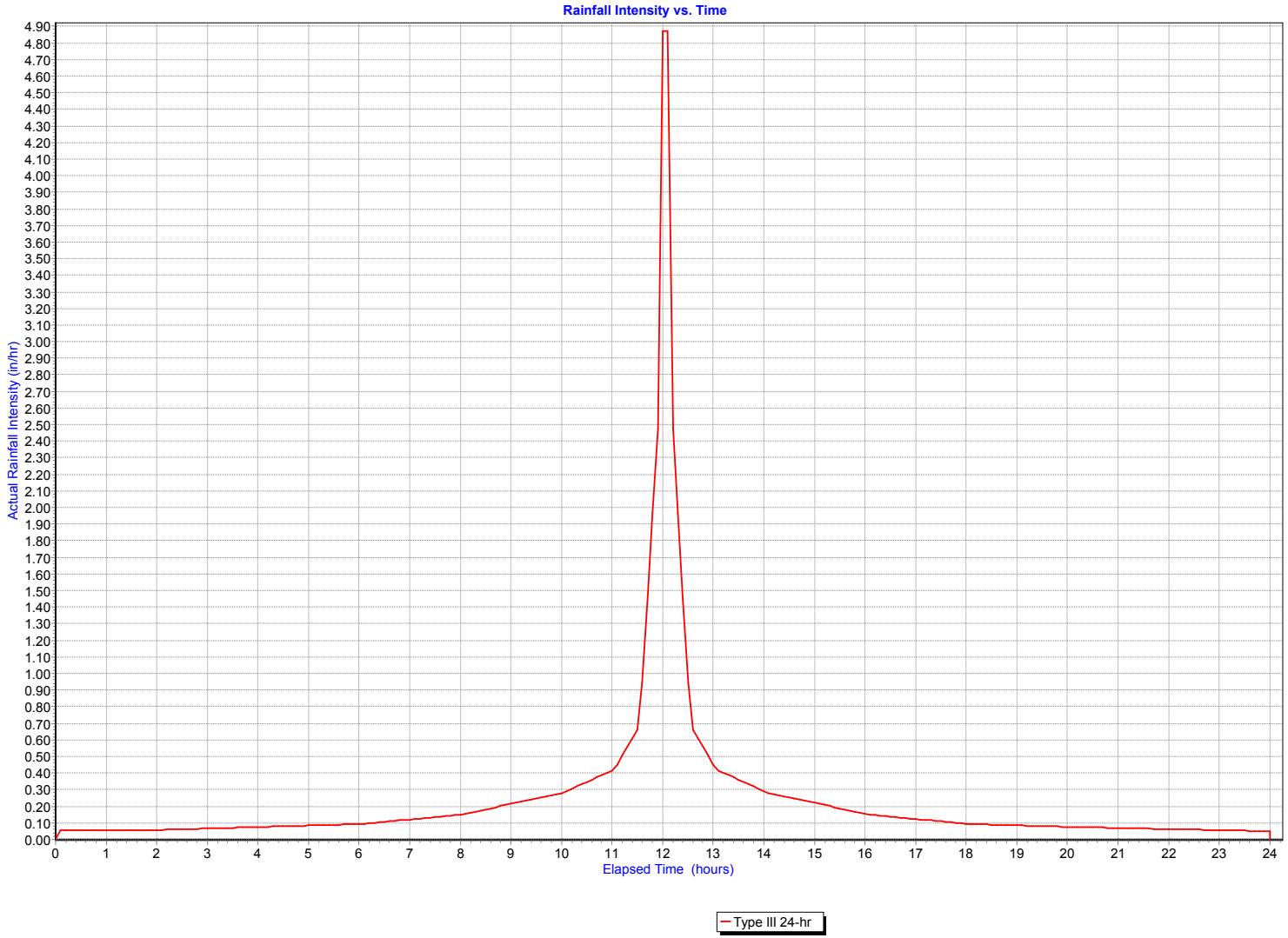
1 Use Type III rainfall for the towns of Brownfield, Buckfield, Denmark, Hartford, Hebron, Hiram, Oxford, and Porter.

Source: Data extracted by the Maine Department of Environmental Protection from the Northeast Regional Climate Center website (http://precip.eas.cornell.edu), Extreme Precipitation Tables. Data from this website was obtained from the National Oceanic and Atmospheric Administration's Regional Climate Center Program.
June 2014

Storm Distribution Report



Storm Distribution Report



Section 25. Parking Justification

lenity
architecture

Friday, October 30, 2011

Barbara Barhydt
Development Review Services Manager
Planning Division
389 Congress Street - 4th Floor
Portland, ME 04101

Re: Portland Retirement Residence – Parking Information

PARKING

Because most of our residents do not drive, we provide private van transportation for their use. The van is available to take the residents to places they need to visit, such as banks, medical offices, shopping areas, etc. This greatly decreased the demand for resident parking for our faculties. On average we find that about 20% of our residents move to our facilities with a car and most choose to not keep the car after about a year at the facility.

Normally we request a parking ratio of 0.70, parking spaces per suite. The principals of Hawthorn Development LLC have developed over 350 retirement residences. Experience from this extensive portfolio (see the attached parking data chart) has shown that 0.70 parking spaces per suite is adequate for our residents, staff and visitors.

The typical daily parking space demand, based on 150 suites, consists of:		
Residents (20% have cars)	30 spaces	
Staff (16 at the largest shift)	16 spaces	
Visitors (approx 20% have visitors each day)	30 spaces	
Total Demand	76 spaces	
Number of spaces proposed for this site	102 spaces	(0.68 spaces per suite)

A benefit of a parking ratio of approximately 0.70 spaces per suite allows us to increase landscaping and open space on the site to create a better residential environment for our residents and adjacent property owners.

A parking space data chart is attached that further supports the 0.70 space ratio by showing over 250 similar retirement facilities and the parking space ratios for each facility. All of these facilities were developed and/or operated by the principals of Hawthorn Development LLC.

Cordially,

Mark D. Lowen
Land Use Manager
Lenity Architecture LLC
(503)480-8652 – Desk
(503) 586-4104 - Cell

PROPERTY DEVELOPED BY HAWTHORN DEVELOPMENT.

FACILITY NAME	ADDRESS	SUITES	GARDEN SUITES	COTTAGES	ALZ UNITS	TOTAL SUITES	PARKING SPACES	PER SUITE
Arbor Lake	928 Arbor Lake Rd. NW, Calgary, Alberta T3G 5J1	113	0	0	0	113	62	0.55
Canyon Meadows	12 Deerview Terrace SE, Calgary, Alberta T2J 7E6	100	0	0	0	100	60	0.60
Churchill Manor	5815 - 34th Avenue Edmonton, Alberta T6L 7B8							
Victoria Park	#9 Avery Street Red Deer, Alberta T4R 2S6	112	0	0	0	112	70	0.63
Ironwood Estates	40 Ironwood Point, St. Albert, Alberta T8N 6C7	109	0	0	0	109	57	0.52
Okanagan Chateau	2100 Benvoulin, Kelowna, BC V1W3A4	106	0	0	0	106	63	0.59
Longlake Chateau	3033 Ross Rd., Nanaimo, BC V9T 5S8	111	0	0	0	111	60	0.54
Prince George Chateau	SWC of Hill Avenue &Tabor Blvd., Prince George, BC	114	0	0	0	114	76	0.67
Imperial Place	13853 102nd Ave., Surrey, BC V3T 1P2	102	0	0	0	102	73	0.72
Victorian @ McKenzie, The	4000 Douglas St., Victoria, BC	114	0	0	0	114	76	0.67
Victorian, The	1773 Feltham Rd., Victoria, BC V8N 2A4	91	0	0	0	91	43	0.47
Riverheights Terrace	4525 Victoria Ave., Brandon, Manitoba R7B 4A6	117	0	0	0	117	70	0.60
Amber Meadow	320 Pipeline Rd., Winnipeg, Manitoba R2P 2X5	114	0	0	0	114	72	0.63
Saint Anne's Court	81 Duncan Lane, Fredericton, NB E3B 4S2	114	0	0	0	114	72	0.63
Chatau de Champlain	300 Boars Head Rd., St. John, New Brunswick E2L3W2	114	0	0	0	114	70	0.61
The Court @ Rushdale	1360 Upper Sherman Blvd., Hamilton, ONT L8W 3Z6	115	0	0	0	115	69	0.61
Kingsdale Chateau	520 Kingsdale Ave., Kingston, ONT K7M 9B6	114	0	0	0	114	72	0.50
Masonville Manor	350 North Centre Rd., London, ONT N5X 3N1	112	0	0	0	112	66	0.59
Crystal View Lodge	#6 Meridian Place, Nepean, ONT K2G 6L9	114	2	3	0	119	70	0.62
Stamford Estates	Portage Rd, Niagra Falls, ONT	115	0	0	0	115	69	0.60
The Court @ Barrhaven	1111 Longfields Dr., Nepean, ONT J2K 5A9	114	0	0	0	114	75	0.66
Sherbrooke Heights	1434 Sherbrooke St.. West, Peterborough, ONT	114	0	0	0	114	70	0.61
Fairwinds Lodge	1218 Michigan Ave., Sarnia, ONT N7S 6J4	111	0	0	0	111	61	0.55
Anchor Pointe	540 Ontario St., St. Catharines, ONT L2N 6J7	123	2	0	0	125	109	0.87
The Crt. @ Pringle Creek	3975 Anderson St., Whitby, ONT LIN 5R5	114	5	0	0	119	70	0.59
The Court @ Brooklin	5909 Anderson St., Brooklin, ONT L1M 2H1	115	0	0	0	115	69	0.60
Kensington Court	1953 Cabana Rd. West Windsor, Ontario	114	0	0	0	114	67	0.59
Mulberry Estates	236 Hodges Rd., Moose Jaw, SK	114	0	0	0	114	73	0.64
Queen Victoria Estates	2025 Heseltine Road, Regina Sask SK S4N 7L2	114	0	0	0	114	67	0.59
Primrose Chateau	310 Cree Crescent, Saskatoon, Sask S7K 8C	114	0	0	0	114	72	0.63
Hawthorns, The	18-21 Elton Road, Clevedon, N. Somerset BS21	109	0	0	0	109		
The Hawthornes - Eastbourne	Carew Road , Eastbourne, BN21 2AX	102	0	0	0	102	46	0.45
Monarch Estates	E. University Drive Auburn, AL 36830	114	0	0	0	114	87	0.76
Rocky Ridge	3517 Lorna Rd., Birmingham, AL 36117	115	0	0	0	115	75	0.65
University Oaks	650 University Blvd S., Mobile, AL 36609	110	0	0	0	110	54	0.49
Eastdale Estates	5801 Eastdale Dr., Montgomery, AL 36117	107	0	0	0	107	52	0.49
Butterfield Place	8420 Rogers Ave., Fort Smith, AR 72903	115	0	0	0	115	75	0.65
Andover Place	2601 Andover Ct., Little Rock, AR 72207	111	0	0	0	111	56	0.50
Apple Blossom	2501 N. 22nd Ave., Rogers, AR 72756	115	0	1	0	117	78	0.68
Gardens at Arkanshire	5000 Arkanshire Circle, Springdale, AR 72674	111	20	0	0	131	98	0.75
Vista Del Rio	13619 - N. 94th Dr., Peoria, AZ 85381	112	6	0	0	118	65	0.55
Vista de la Montana	18510 N. Parkview Place, Surprise, AZ 85374	110	3	0	0	113	72	0.64
Desert Rose	1545 S. 14th Ave., Yuma, AZ 85364	113	0	0	0	113	56	0.50
Quail Lodge	4840 Deer Valley Road, Antioch, CA 94509	121	2	0	0	123	76	0.62
Oaks of Auburn, The	3250 Blue Oaks Dr., Auburn, CA 95602	110	0	0	0	110	63	0.57
Carriage House Estates	8200 Westwold Dr. Bakersfield, CA 93311	112	6	6	0	124	88	0.79
Columbus Estates	3201 Columbus, Bakersfield, CA 93306	126	0	0	0	126	75	0.60
Oakmont	2801 Cohasset, Chico, CA 95926	91	0	0	0	91	51	0.56
Creekside Oaks	1715 Creekside Rd., Folsom, CA 95630	109	0	0	0	109	72	0.66
Fig Garden	6035 N. Marks Ave., Fresno, CA 93711	101	0	0	0	101	46	0.46
Remington, The	2727 N. 11th Ave., Hanford, CA 93230	112	0	4	0	116	67	0.62
Waterford Terrace	5580 Aztec Dr., La Mesa, CA 91942	90	0	0	0	90	42	0.47
Palms, The	13001 La Mirada Blvd., La Mirada, CA 90638	162	0	0	0	162	80	0.49
Vintage, The	2145 W. Kettleman Dr., Lodi, CA 95240	108	9	0	0	117	62	0.53
Hampshire, The	3460 R St., Merced, CA 95348	109	4	0	0	113	67	0.59
Standiford Place	3420 Shawnee Dr., Modesto, CA 95350	102	0	0	0	102	65	0.64
Redwood	2350 Redwood Rd., Napa, CA 94558	97	0	0	0	97	52	0.54
Deer Park	646 Canyon Rd., Novato, CA 94947	85	0	0	0	85	43	0.51
Feather Canyon	5900 Canyon View Drive, Paradise, CA 95969	115	5	6	0	126	84	0.74
Bay Park	2621 Appian Wy., Pinole, CA 94564	96	0	0	0	96	51	0.53
Sierra Hills	2500 W. Henderson Ave., Porterville, CA 93257	112	7	0	0	119	76	0.64
Valencia Commons	6729 Hermosa, Rancho Cucamonga, CA	114	0	0	0	114	72	0.63
Hilltop	451 Hilltop Dr., Redding, CA 96003	96	0	0	0	96	41	0.43
Mission Commons	10 Terracina Blvd., Redlands, CA 92373	139	0	0	0	139	104	0.75
Magnolia	8537 Magnolia, Riverside, CA 92373	96	0	0	0	96	35	0.36

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The Bonaventure	10749 Telegraph Rd., San Buenaventura, CA	115	0	0	0	115	80	0.70
Mistywood	1275 Pleasant Grove Blvd., Roseville, CA 95747-5858	1150	0	0	0	115	75	0.65
Las Brisas	1299 Briarwood Dr., San Luis Obispo, CA 93401	100	0	0	0	100	45	0.45
Westmont	1675 Scott Blvd., Santa Clara, CA 95050	136	0	0	0	136	90	0.66
n/a	NE Corner of Madera Road & Sunset Lane, Simi Valley, CA	96	0	0	0	96	53	0.55
Walnut Park	4119 W. Walnut, Visalia, CA 93277	101	0	0	0	101	53	0.52
Arcadia Place	1080 Arcadia Ave., Vista, CA 92084	114	0	0	0	114	58	0.51
Bridgecreek	3601 Holt Ave., West Covina CA 91791	108	0	0	0	108	54	0.50
Sunridge	5820 Flintridge Dr., Colorado Springs, CO 80918	90	0	0	0	90	45	0.50
Quincy Place	7200 Quincy Ave. East, Denver, CO 80202	113	4	0	0	117	74	0.63
Parkwoods Estates	2201 S. Lemay, Ft. Collins, CO 80525	110	0	0	0	110	168	1.53
Atrium of Grand Valley, The	3260 N. 12th, Grand Junction, CO 81506	126	0	0	0	126	79	0.63
Mesa View	601 Horizon Place, Grand Junction, CO 81506	101	0	0	0	101	39	0.39
Greeley Place	1051 6th St., Greeley, CO 80631	102	0	0	0	102	46	0.45
Lakewood Estates	8585 W. Dakota Ave., Lakewood, CO 80226	90	0	0	0	90	52	0.58
Longmont Regent	2210 Main St., Longmont, CO 80501	96	0	0	0	96	67	0.70
Pueblo Regent	100 San Carlos, Pueblo, CO 81005	97	0	0	0	97	41	0.42
Augustine Landing	10141 Old St. Augustine Rd. Jacksonville, FL 32257	109	0	0	0	109	65	0.60
Azalea Park	1325 Grasslands Blvd. Lakeland , FL 33813	115	0	0	0	115	79	0.69
Marion Woods	1661 SE 31st St., Ocala, FL 32765	115	0	10	0	125	96	0.91
University Pines	8991 University Parkway, Pensacola, FL 32514	110	3	0	0	113	54	0.48
Desoto Beach Club	NWC of Honore Ave. & DeSoto Road, Sarasota, FL	115	0	0	0	115	67	0.58
Cherry Laurel	1009 Concord Dr., Tallahassee, FL	115	0	0	0	115	67	0.58
The Tremont	6983 Red Bug Lake Rd., Tuskawilla, FL 32765	118	0	0	0	118	76	0.64
Iris Place	755 Epps Bridge Rd., Athens, GA	118	6	16	0	140	138	1.28
Washington Commons	4100 Washington Road, Augusta, GA 30909	115	0	10	0	125	74	0.70
Riverplace	6850 River Rd., Columbus, GA 31904	112	0	0	0	112	63	0.56
The Regency House	341 Winn Wy., Decatur, GA 30030	102	0	0	0	102	60	0.59
Smoky Springs	940 South Enota Drive, Gainesville, GA 30501	115	0	0	0	115	70	0.61
Pinegate	4207 Forsythe Rd., Macon, GA	115	0	0	0	115	82	0.71
River's Edge	6206 Waters Ave. Savannah, GA 31406	115	0	4	0	119	74	0.67
Hawaii Kai - Phase I	428 Kawaihae Dr., Honolulu, HI 96825	139	0	13	43	195	173	0.98
Hawaii Kai - Phase II	428 Kawaihae St., Honolulu, HI 96825	135	0	2 DPLX	38	175	145	0.87
Kalama Heights	101 Kanani Road Kihei, Maui, HI 96753	120	0	0	0	120		
Palmer Hills	2617 Maplecrest Rd., Bettendorf, IA 52722	104	0	0	0	104	63	0.61
Mallard Point	2603 Orchard Dr., Cedar Falls, IA 50613	112	4	6	0	122	101??	
Beaverdale Estates	4610 Douglas Ave., Des Moines, IA 50310	102	0	0	0	102	58	0.57
Walden Place	2423 Walden Rd., Iowa City, IA 52246	102	0	0	0	102	60	0.59
Illahee Hills	8308 Colby Parkway, Urbandale, IA 50322	104	3	0	0	107	76	0.71
Chateau de' Boise	7250 Poplar St., Boise, ID 83704	98	0	0	0	98	42	0.43
Essington Estates	901 Essington Rd., Joliet, IL 60435	110	0	0	0	110	56	0.51
Blair House	1200 East College, Normal, IL 61761	109	0	0	0	109	66	0.61
Curtis Creek	823 South First St., Quincy, IL 62301	118	0	0	0	118	76	0.64
Montvale Estates	2601 Montvale Dr., Springfield, IL 62704	109	10	0	0	119	64	0.54
Redbud Hills	333 E. Moores Pike, Bloomington, IN 47401	112	0	0	0	112	64	0.57
Parkside Court	3660 Central Ave., Columbus, IN 47203	38/80	0	0	0	118	75	0.64
Willow Park	5050 Lincoln Ave., Evansville, IN 47715	98	0	0	0	98	49	0.50
Arbor Glen	5202 St. Joe Rd., Ft. Wayne, IN 46835	110	8	0	0	118	59	0.50
Greenwood Terrace	11150 S. Greenwood Dr., Olathe, KS 66062	115	0	0	0	115	75	0.65
Thornton Place	2901 SW Armstrong, Topeka, KS 66614-5632	112	7	0	0	119	70	0.59
Grasslands Estates	W of SWC OF 13th St. W. & Maize	115	0	0	0	115	72	0.63
Ashwood Place	102 Leonardwood, Frankfort, KY 40601	99	0	0	0	99	71	0.72
Hartland Hills	4470 Tates Creek Rd., Lexington, KY 40515	117	0	0	0	117	69	0.59
Oxmoor Lodge	8021 Christian Way, Louisville, KY 40222	112	4	2	0	118	80	0.70
Ponder Creek Estates	620 Valry College Drive Louisville, KY 40272	118	0	0	0	118	84	0.71
Jackson Oaks	SEC of Bleich Rd. & Marshall Ave., Paduchah, KY 42003	115	0	0	0	115	75	0.65
Whealdon Estates	8680 Jefferson Hwy., Baton Rouge, LA 70809	98	0	0	0	98	48	0.49
Nouveau Marc	1101 Sunset Blvd., Kenner, LA 70065	108	0	0	0	108	33	0.31
Landing at Behrman Place, The	3601 Behrman Place, New Orleans, LA 70114	107	0	0	0	107	38	0.36
Summerfield Estates	9133 Baird Rd., Shreveport, LA 71118	101	0	0	0	101	52	0.51
Quail Run Estates	50 Cardinal Drive Agawam, MA 01001	107	5	9	0	121	75	0.73
Summer Place	20 Summer St., Chelmsford, MA 01824	110	0	0	0	110	62	0.56
Devonshire Estates	329 Pittsfield Rd., Lenox, MA 01240	108	10	10	0	128	110	0.70
Sunbury Village	922 Ohio St. Bangor, ME 04401	115	0	0	0	115	78	0.68
The Woods at Canco	219 Canco Rd. Portland, ME 04103	115	5	8	0	128	91	0.81

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Genesee Gardens	4505 of Calkins Rd. Flint, MI	117	0	0	0	117	78	0.67
Lincoln Square	3121 Lake Michigan Dr. NW, Grandrapids, MI 46504	115	0	0	0	115	76	0.66
The Marquette	5968 Park Lake Rd, Meridian, MI 48823	115	0	0	0	115	69	0.60
Blue Water Lodge	2840 Keewahdin Road, Port Huron, MI 48059	115	0	4	0	119	78	0.70
Wescourt	4141 McCarty Rd., Saginaw, MI 48603	109	5	4	0	118	73	0.66
Glen Eagle	Silver Lake @ South Airport Rd., Traverse City, MI	115	0	4	0	119	78	0.70
The Inn at Cass Lake	900 N. Cass Lake Rd., Waterford, MI 48328	110	0	0	0	110	64	0.58
Aurora Pond	5516 Byron Center Ave. S.W., Wyoming, MI 49509	115	7	10	0	132	120	1.07
Lodge at White Bear	3666 East County Line Rd. White Bear Lake, MN 55110	115	0	0	0	115	69	0.60
Briarcrest Estates	14525 Clayton Rd., Ballwin, MO 63011	90	0	0	0	90	53	0.59
Boone Landing	109 Keene, Columbia, MO	118	0	0	0	118	74	0.63
The Carlyle	SWC of NE Independence Ave. &NE Tudor Rd. Lee's Summit, MO	118	0	20	0	123	83	0.73
Country Squire	1602 Buckingham St., St. Joseph, MO 64506	110	0	0	0	110	64	0.58
Lakeview Park	1391 Bowles Ave., St. Louis, MO	112	0	0	0	112	72	0.64
Aspen View	3075 Avenue C, Billings, MT 59102	109	12	4	0	125	97	0.83
Hunter's Pointe	2801 Colonial Dr., Helena, MT 59601	109	0	6	0	115	90	0.87
Jordan Oaks	10820 Penny Rd., Cary, NC 27511	115	0	0	0	115	83	0.72
Durham Regent	3007 Pickett Rd., Durham NC 27705	122	0	0	0	122	39	0.32
Emerald Pond	205 Emerald Pond Lane, Durham NC 27705	112	0	6	0	118	74	0.70
Pinecrest	915 - 29th Ave NE, Hickory, NC 28601	118	0	0	0	118	74	0.63
The Stratford	1573 Skeet Club Rd., High Point, NC 27265	115	0	0	0	115	73	0.63
Lakeshore Commons	1402 Hospital Plaza Dr., Wilmington, NC 28401	118	0	0	0	118	67	0.57
The Woods at Holly Tree	4610 Holly Tree Rd., Wilmington, NC 28403	115	0	0	0	115	59	0.51
Creekside Terrace	N. side of Old Vineyard Rd. Winston-Salem, NC	115	0	0	0	115	87	0.76
Brentwood Estates	1111 So. 70th, Lincoln, NE 68510	103	0	0	0	103	62	0.60
Bear Canyon Estates	4440 Morris St. NE, Albuquerque, NM 87111	110	14	0	0	124	77	0.62
Golden Mesa	150 N. Roadrunner Parkway Las Cruces, NM 88001	110	10	9	0	129	104	0.94
Montgomery Park	6351 Transit Rd., Clarence, NY 14051	115	0	0	0	115	75	0.65
Maple Downs	7220 Geneese St. E, Fayetteville, NY 13066	115	0	0	0	115	74	0.64
Fleming Point	710 Latta Rd., Rochester, NY 14612	115	0	3	0	118	91	0.77
Carson Plaza	2120 E. Long, Carson City, NV 89706	96	0	0	0	96	58	0.60
Maplewood Estates	55 Ayrault Rd., Fairport, NY 14450	111	0	8	0	119	91	0.88
Sky Peaks	1520 Sky Valley Dr., Reno, NV 89503	119	0	0	0	119	102	0.86
The Worthington	4541 Johnston Rd., Gahanna, OH	115	0	0	0	115	75	0.65
Mulberry Gardens	499 South Main St., Munroe Falls, OH 44262	86	0	0	0	86	43	0.50
Pearl Crossing	19201 Pearl Rd., Strongsville, OH 44136	115	0	0	0	115	73	0.63
Alexis Gardens	4560 W. Alexis Rd., Toledo, OH 43623	115	0	0	0	115	73	0.63
Tallgrass Estates	Camelot Dr., Bartlesville, OK 74005	113	0	0	0	113	65	0.58
Silver Arrow Estates	S. Elm Place, Broken Arrow, OK 74012	115	0	5	0	120	81	0.74
Prarie Rose	7201 South Riverside Parkway, Tulsa, OK	118	0	0	0	118	88	0.75
Mountain View	548 North Main, Ashland, OR 97520	110	0	0	0	110	58	0.53
Edgewood Pointe ALF	7733 S.W. Scholls Ferry Rd. Beaverton, OR 97008	46 ALF	0	4	16	66	49	0.84
Stone Lodge	1460 N.E. 27th St. Bend, OR 97701	112	0	0	0	112	66	0.59
The Regent	440 Elks Dr., Corvallis OR 97330	82	0	0	0	82	63	0.77
Stoneybrook ALF	4650 SW Holleyhock Circle, Corvallis, OR 97333	84	0	0	0	84	50	0.60
Stoneybrook Lodge	49th St. & S.W. Country Club Dr., Corvallis, OR 97333	115	0	5	0	120	80	0.73
Sheldon Oaks	2525 Cal Young Rd., Eugene, OR 97402	110	0	0	0	110	71	0.65
Southwind ALF	8360 Carson Rd., Gladstone, OR 97027	86	0	0	0	86	51	0.59
Somerset Lodge	8330 Cason Rd, Gladstone, OR 97027	115	7	0	0	122	80	0.66
Rougue Valley	1001 A St. NE, Grants Pass, OR 97526	90	0	0	0	90	40	0.44
Gresham Manor	2895 E. Powell Blvd., Gresham, OR 97080	102	0	0	0	102	46	0.45
Rock Creek	19295 NW Cornell Rd., Hillsboro, OR 97124	108	0	0	0	108	56	0.52
Royal Oak	2180 Poplar Dr., Medford, OR 97501	90	0	0	0	90	45	0.50
Astor House @ Springbrook Oaks	3801 E. Hayes St., Newberg, OR 97132	115	0	4	0	119	60	0.54
Parkrose Chateau	3141 NE 148th Ave., Portland, OR 97230	107	0	0	0	107	76	0.71
Garden Valley	1800 Hughwood, Roseburg, OR 97470	92	0	0	0	92	45	0.49
Hidden Lakes	400 Madrona Ave. SE, Salem, OR 97302	123	0	0	0	123	80	0.65
Madrona Hills	707 Madrona Ave. SE, Salem, OR 97302	103	0	0	0	103		
Bethel Park	2999 Bethel Church Rd., Bethel Park, PA 15102	116	0	0	0	116	70	0.60
Essex House	20 N. 12th St., Lemoyne, PA 17043	115	0	0	0	115	67	0.58
The Manor @ Oakridge	4500 Oakhurst Blvd., Susquehanna Township, PA 17110	113	0	0	0	113	74	0.65
Pocasset Lodge	12 Old Pocasset Lane, Johnston, RI 02919	172	0	0	0	172	102	0.59
Forest Pines	1720 Devonshire Dr., Columbia, SC 29204	115	0	0	0	115	69	0.60
Haywood Estates	1180 Haywood Rd., Greenville, SC 29615	110	0	0	0	110	53	0.48

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Westminster	11 E Augusta Pl., Greenville, SC 29605	115	0	0	0	115	70	0.61
Indigo Pines	110 Gardner Drive, Hilton Head Is., SC 29926	113	5	0	0	118	68	0.58
Deepwood Estates	203 Old Chapin Rd. Lexington, SC 29072	115	0	0	0	115	72	0.63
Eagle Crest	3736 Robert Grissom Parkway, Myrtle Beach, SC 29577	118	0	0	0	118	77	0.65
Holiday Hills Estates	2620 Holiday Lane, Rapid City, SD 57702	113	0	0	0	113	69	0.61
Rosewood Estates	505 Rice Rd., Tyler, TX 75703	110	0	0	0	110	54	0.49
Creekside @ Shallowford	7511 Shallowford Rd., Chattanooga, TN 37421	114	0	4	0	118	65	0.59
Uffelman Estates	125 Uffelman Dr., Clarksville, TN 37043	104	3	0	0	107	61	0.57
Manor at Steeplechase	314 Cool Springs Blvd., Franklin, TN 37067	118	0	0	0	118	71	0.60
Jackson Meadow	25 Max Lane Dr., Jackson, TN 38305	113	0	0	0	113	78	0.69
Echo Ridge	8458 Gleason Dr., Knoxville, TN 37919	109	0	0	0	109	63	0.58
Franklin Park	3393 Kirby Rd., Memphis, TN 38115	129	0	0	0	129	67	0.52
Clairmont	4707 Bell St., Amarillo, TX 79109	96	0	0	0	96	47	0.49
Arlington Plaza	6801 W. Poly Webb Rd., Arlington, TX 76016	96	0	0	0	96	68	0.71
Fox Run	2315 Little Rd., Arlington, TX 76016	102	0	0	0	102	54	0.53
Englewood Estates	2603 Jones Rd., Austin, TX 78745	110	0	0	0	110	64	0.58
Bentley, The	3362 Forest Lane, Dallas, TX 75234	109	8	0	0	117	81	0.69
Whiterock Court	8900 Block of Whiterock Trail Dallas, TX 75204	115	0	0	0	115	78	0.68
Rio Norte	1941 Saul Kleinfeld Dr., El Paso TX 79936	110	5	4	0	119	63	0.57
South Colleyvine Ranch	2300 Pool Rd., Grapevine, TX 76071	115	0	0	0	115	79	0.69
Ventura Place	3026 54th St., Lubbock, TX 79413	112	18	6	0	136	96	0.71
Polo Park	2100 Castleford Rd., Midland, TX 79706	107	0	0	0	107	65	0.61
Brook Ridge	1001 W. Ridge Rd., Pharr, TX 78577	107	0	0	0	107	67	0.63
Cottonwood Estates	1940 West Spring Creek Parkway, Plano, TX 75086	113	0	0	0	113	68	0.60
El Dorado	714 W. Arapaho Rd., Richardson, TX 75080	102	0	0	0	102	53	0.52
Cowhorn Creek Estates	5353 Cowhorn Creek Rd., Texarkanna, TX 75503	112	0	0	0	112	67	0.60
Rosewood Estates	505 Rice Rd., Tyler, TX 75703	110	0	0	0	110	54	0.49
Lakeshore Estates	3209 Village Green Dr., Waco, TX 76710	110	5	0	0	115	70	0.61
Pioneer Valley Lodge	400 East St. & 2350 North St., North Logan, UT 84341	115	0	0	0	115	72	0.63
Harrison Regent	481 Harrison Blvd., Ogden, UT 84403	90	0	0	0	90	39	0.43
Seville, The	325 W. Center, Orem, UT 84058	97	0	0	0	97	54	0.56
South Towne Ranch	310 East 10600 South St., Sandy, UT	115	0	0	0	115	66	0.57
Lighthouse Point	Southside Cedar Rd. W & Waters Road, Chesapeake, VA	115	0	0	0	115	80	0.70
Fairmont, The	9852 Fairmont Ave., Manassas, VA 22110	100	0	0	0	100	32	0.32
Virginian, The	300 Twinridge Lane, Richmond, VA 23235	117	0	0	0	117	72	0.62
Elm Park	4230 Elm View Rd., Roanoke, VA 24014	110	0	0	0	110	63	0.57
Colonial Harbor	8135 George Washington Memorial Highway, Yorktown, VA 23692	118	0	0	0	118	79	0.66
Garden Club, Bellevue	13350 SE 26th, Bellevue, WA 98005	103	0	0	0	103	43	0.42
Parkway Chateau	2818 Old Fairhaven Pwy., Bellingham, WA 98225	109	0	0	0	109	60	0.55
Cascadian	3915 Colby Ave., Everett, WA 98201	102	0	0	0	102	52	0.51
Charbonneau	1310 Grandridge Ave. Kennewick, WA	118	0	0	0	118	78	0.66
Capitol Place	700 Black Lake Blvd., Olympia, WA 98502	104	0	0	0	104	56	0.54
Evergreen Place	1416 Monroe Ave. NE, Renton, WA 98056	110	0	0	0	110	65	0.59
Harvard Park	1616 E. 30th Ave., Spokane, WA 99203	105	0	0	0	105	39	0.37
Pt. Defiance	6414 N. Park Way, Tacoma, WA 98407	136	0	0	0	136	71	0.52
Park Plaza	1400 Dalles Military Rd., Walla Walla, WA 99362	99	0	0	0	99	55	0.56
Oakwood Hills	4316 Oakwood Hills Parkway, Eau Claire, WI 54701	114	0	0	0	114	69	0.61
The Jefferson	9401 Old Sauk Road, Madison, WI 53562	115	0	0	0	115	67	0.58
	Average Per Suite parking provision:							0.61

Section 26. Supplemental Fire Department Information

Portland Retirement Residence – Yearly Fire System Maintenance for Hydrant and Pump Facility

The owner shall maintain, or arrange to have maintained, the private fire hydrant in compliance with the maintenance program utilized by the Portland Water District, and with the following standards, at a minimum:

1. The owner will have an annual inspection completed and annual written certification prepared in regard to fire flow and operability by a person qualified to make such certification. A copy of the certification shall be sent to the City of Portland Fire Chief, with a copy to the Portland Water District. The annual inspection will include:

    - Determination of fir flow.
    - Check chains, make sure they allow the nozzle cap to turn freely.
    - Check all caps, make sure they all can be removed.
    - Check paint, remove all lose paint and repaint if necessary.
    - Flushing of hydrant.
    - Lubrication of hydrant.

2. The owner shall paint the hydrant to match City Hydrants except that the body shall be red, no less than every five (5) years;
3. The owner shall repair any and all damage to the hydrant, within no less than seventy-two (72) hours of actual notice of such damage.
4. The fire hydrant shall be flushed and winterized by a contractor with fire hydrant maintenance experience by November 15 of every year.
5. The Portland Water District shall be notified prior to flushing the fire hydrant.
6. The owner shall remove snow in accordance with the Standard for Hydrant Snow Removal of the Portland Fire Department, which shall include removal of snow for no less than forty-eight (48) inches from around the hydrant in all directions, with a minimum forty-eight-inch pathway to the open street or access way.
7. The fire pump facility including pumps and controls shall be examined and tested once a year by a contractor licensed in fire pump maintenance. A report relative to the proper operation of the facility shall sent to the City of Portland Fire Chief.

Att. JJ

ENTRANCE TO PROJECT

POD-HYD01241 (WS005181)
Date: 2012-03-14
Static PSI: 93
Residual PSI: 0
Test Flow (GPM): 0
Flow Hydrant:
Flow at 20 PSI (GPM):

Date: 2011-09-09
Static PSI: 98
Residual PSI: 0
Test Flow (GPM): 1342
Flow Hydrant: POD-HYD01241
Flow at 20 PSI (GPM): 0

Date: 1991-06-20
Static PSI: 84
Residual PSI: 0
Test Flow (GPM): 1255
Flow Hydrant: POD-HYD01241
Flow at 20 PSI (GPM): 0

POD-HYD01385 (WS001680)
Date: 2012-02-15
Static PSI: 79
Residual PSI: 0
Test Flow (GPM): 0
Flow Hydrant:
Flow at 20 PSI (GPM):

Date: 2011-09-09
Static PSI: 76
Residual PSI: 58
Test Flow (GPM): 1342
Flow Hydrant: POD-HYD01241
Flow at 20 PSI (GPM): 2477

Date: 2003-09-30
Static PSI: 75
Residual PSI: 0
Test Flow (GPM): 1221
Flow Hydrant: POD-HYD01385
Flow at 20 PSI (GPM): 0

POD-HYD01222 (WS004227)
Date: 2012-02-15
Static PSI: 70
Residual PSI: 0
Test Flow (GPM): 0
Flow Hydrant:
Flow at 20 PSI (GPM):

Date: 2003-09-30
Static PSI: 68
Residual PSI: 64
Test Flow (GPM): 1221
Flow Hydrant: POD-HYD01385
Flow at 20 PSI (GPM): 4672

Date: 2003-04-11
Static PSI: 51
Residual PSI: 0
Test Flow (GPM): 0
Flow Hydrant
Flow at 20 PSI (GPM):

POD-HYD01770 (WS003165)
Date: 1991-06-20
Static PSI: 69
Residual PSI: 0
Test Flow (GPM): 1266
Flow Hydrant: POD-HYD01770
Flow at 20 PSI (GPM): 0

POD-HYD01230 (WS005289)
Date: 2012-02-15
Static PSI: 74
Residual PSI: 0
Test Flow (GPM): 0
Flow Hydrant:
Flow at 20 PSI (GPM):

POD-HYD01229 (WS002618)
Date: 2012-02-15
Static PSI: 77
Residual PSI: 0
Test Flow (GPM): 0
Flow Hydrant:
Flow at 20 PSI (GPM):

POD-HYD01773 (WS005194)
Date: 1991-06-20
Static PSI: 76
Residual PSI: 0
Test Flow (GPM): 1233
Flow Hydrant: POD-HYD01773
Flow at 20 PSI (GPM): 0

POD-HYD01247 (WS000864)
Date: 2012-03-14
Static PSI: 100
Residual PSI: 0
Test Flow (GPM): 0
Flow Hydrant:
Flow at 20 PSI (GPM):

Date: 2003-04-11
Static PSI: 90
Residual PSI: 0
Test Flow (GPM): 0
Flow Hydrant:
Flow at 20 PSI (GPM):

Ridge
Osprey
Ridge
Wildwood
Ocean Ave
Summer
Summer
Summer
Summer
Summer
Summer
Ashley
Ashley
Ashley
Ashley
Barnwood
Eben Hill
Presumpscot
I-295
I-295
I-295

0 75 150 300 450 600 Feet

1 inch = 100 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

Ocean Avenue
Portland

This map depicts flow testing data for the selected hydrants from PWD's asset management system. Note: a static pressure with a zero residual pressureand a flow hydrant that is the same as the test hydrant depicts a single-hydrant static pressure-only test.

Drawn By: BSJ

Prepared For: Robert McSorley
Sebago Technics

Scale: As Noted

Date: January 14, 2014

BY:	RAM		DATE:	9/10/2015			PRELIMINARY HEAD LOSS CALCUALTION WATER SYSTEM - WITH FIRE PUMP AND ZONE ANALYSIS OF:														
CONST. TYPE:	5A	HOURS FOR PEAK FLOW DETERMINATION			16																
SF FOR FIRE FLOW:	134,646	REQUIRED FIRE FLOW FROM SF.			1700		Portland Retirement Community												SHEET NO. 1 OF 1		
1 NODE NO.	2 CONN. TO NODE	3 NO. UNITS	4 NO. OF BEDS	5 GAL/DAY PER CAPITA	6 TOTAL DOM. FLOW (GPM)	7 SPRINKLER FLOW (GPM)	8 FIRE HYDRANT FLOW (GPM)	9 TOTAL NODE FLOW (GPM)	10 CUMM. NODE FLOW (GPM)	11 MAX VELOCITY (FPS)	12 MAIN SIZE (IN)	13 MAIN LENGTH (FT)	14 MAIN C FACTOR	15 K FRICTION VALUE	16 FITTING FRICTION (FT)	17 FRICTION LOSS THIS NODE (FT)	18 CUMM. LOSS THIS ZONE (FT)	19 MAIN ELEV. NAVD	20 STATIC HEAD (FT)	21 TOTAL SYSTEM HEAD (FT)	
1	2	168	3.2	60	200.00			200.00	200.00	1.28	8	70	120			0.08	48.42	135.00	-5.00	64.03	
2	3				0.00			0.00	200.00	1.28	8	230	120			0.25	48.34	130.00	0.00	69.10	
3	4				0.00		1700	1700.00	1900.00	12.13	8	540	120		10.3950	37.70	48.09	130.00	-20.00	69.35	
4																		110.00		127.05	

PRESSURE AT BUILDING = 27.7 PSI

PRESSURE SUPPLIED BY PUMPS AT 1,900 GPM = 55 PSI

BY:	RAM		DATE:	8/10/2014			PRELIMINARY HEAD LOSS CALCUALTION WATER SYSTEM- WITHOUT FIRE PUMP AND ZONE ANALYSIS OF:														
CONST. TYPE:	5A	HOURS FOR PEAK FLOW DETERMINATION			16																
SF FOR FIRE FLOW:	134,646	REQUIRED FIRE FLOW FROM SF.			1700		Portland Retirement Community												SHEET NO.	1	OF 1
1 NODE NO.	2 CONN. TO NODE	3 NO. UNITS	4 NO. OF BEDS	5 GAL/DAY PER CAPITA	6 TOTAL DOM. FLOW (GPM)	7 SPRINKLER FLOW (GPM)	8 FIRE HYDRANT FLOW (GPM)	9 TOTAL NODE FLOW (GPM)	10 CUMM. NODE FLOW (GPM)	11 MAX VELOCITY (FPS)	12 MAIN SIZE (IN)	13 MAIN LENGTH (FT)	14 MAIN C FACTOR	15 K FRICTION VALUE	16 FITTING FRICTION (FT)	17 FRICTION LOSS THIS NODE (FT)	18 CUMM. LOSS THIS ZONE (FT)	19 MAIN ELEV. NAVD	20 STATIC HEAD (FT)	21 TOTAL SYSTEM HEAD (FT)	
1	2	168	3.2	60	200.00			200.00	200.00	1.28	8	70	120			0.08	48.42	135.00	-5.00	7.43	
2	3				0.00			0.00	200.00	1.28	8	230	120			0.25	48.34	130.00	0.00	12.51	
3	4				0.00		1700	1700.00	1900.00	12.13	8	540	120		10.3950	37.70	48.09	130.00	-20.00	12.76	
4																		110.00		70.46	

PRESSURE AT BUILDING = 3.2 PSI

PRESSURE SUPPLIED AT ENTRANCE 1,900 GPM = 30.5 PSI

Fire Flow Calculations

First Floor = 39,869
Second Floor = 31,552
Third Floor = 32,911
Fourth Floor = 30,314
Total = 134,646 Type V-A V(111)

Required Fire Flow 6,750 GPM
75% Fire Sprinkler Reduction 1,688 GPM

WATER FLOW TEST REPORT

HYDRANT # & LOCATION: Ocean Avenue, POD-HYD01385 (WS001680) DATE: 9/9/2011

TEST BY: _____ Day or Week: _____ TIME OF DAY: _____ MIN. OF FLOW: _____

WATER SUPPLIED BY: Portland Water District

PURPOSE OF TEST: Fire Flow for Main Design

DATA

FLOW HYDRANT(S)	A1	A2	A3
SIZE OPENING:	2.5		
COEFFICIENT:	0.9		
PITOT READING:	64		
GPM:	**1342**	0	0

TOTAL FLOW DURING TEST: **1342** GPM

STATIC READING: 76 PSI RESIDUAL: 58 PSI

A1 RESULTS: AT 20 PSI RESIDUAL **2477** GPM AT 0 PSI **2921** GPM

ESTIMATED CONSUMPTION: **1342** GAL.

REMARKS:

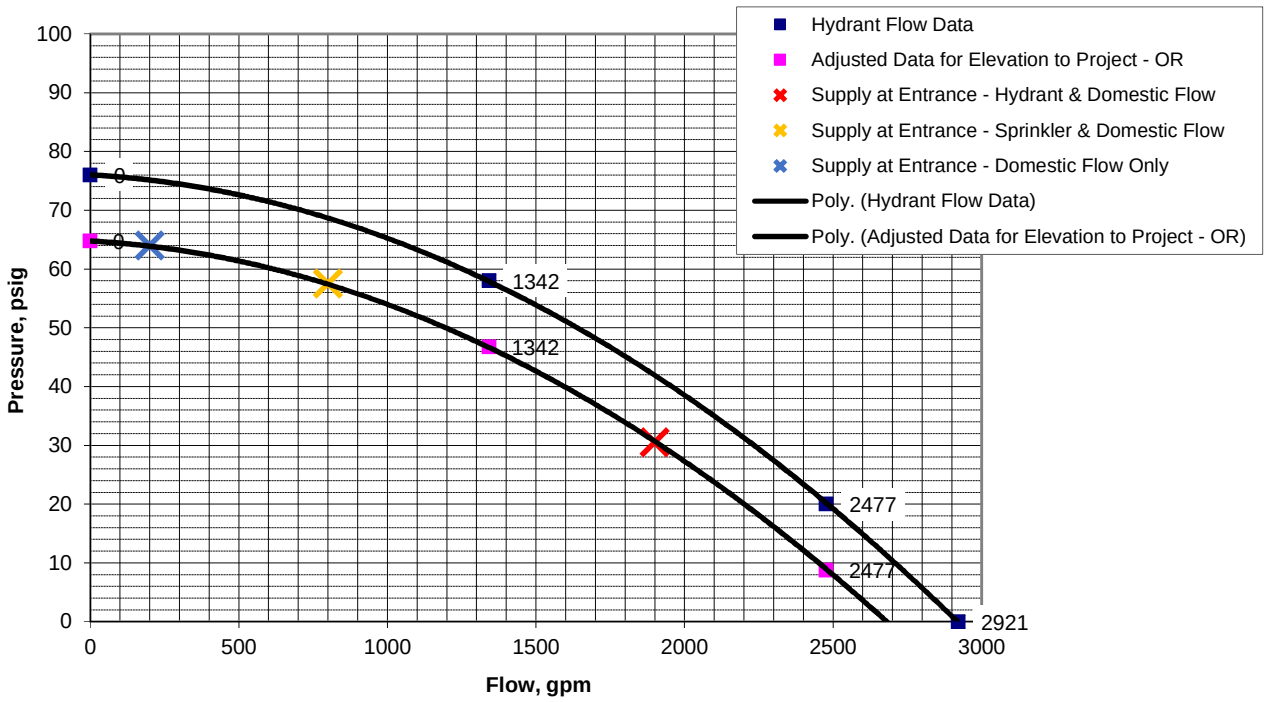
	PSI	FT
0	76	64.74459
1342	58	46.74459
2477	20	8.744589
2921	0	-11.2554

elev at ent NAVD	elev at hyd NAVD	diff
111	85	26

HEAD ADJUSTMENT*

	FH Flow	Fire Sprink Flov	Domestic	
Required Fire Flow:	1900	800	200	GPM
Head at Main:	30.5	57.5	64	PSI

C = 0.9
D = 2.5
P = 64



***Fire Flow Test Information supplied by Portalnd Water District.**

SEBAGO TECHNICS

75 John Roberts Road, Suite 110
South Portlland, ME 04106-6963

Section 27. Sewer Flow Calculation

SEBAGO TECHNICS
75 John Roberts Road, Suite 1A
South Portland, Maine 04106
(207) 200-2100 FAX (207) 856-2206

JOB Portland Retirement Residence
SHEET NO. 1 OF 1
CALCULATED BY RAM DATE 11/10/2015
CHECKED BY DATE
FILE NAME SCALE

SEWER PARTIAL FLOW CALCULATION

Determine Project Peak Flow, Q_p (cfs)

135 units x 60 gpd/unit = 8,100 gpd, 15 duplex units x 120 gpd/unit = 1,800 gpd, 2 manager units x 90 gpd = 180 gpd. Total: 10,080 gpd.

Q_p = 10,080 GPD / 16 hors/day / 60 min/hour x 6 = 63 GPM = 0.1404 cfs

Determine full flow, Q_f, for an 8" gravity main @ 8.00 slope

Manning's formula $Q_f = \frac{1.486}{\eta} AR^{2/3}S^{1/2}$

D_f =	8 in
A = πr2 =	0.3491 sf
R = r/2, for pipe flowing full =	0.1667
S =	0.08 ft/ft
η =	0.012
Q_f =	3.7027 cfs
V_f =	10.608 ft/s

From partial flow table for Q_p/Q_f = 0.0379, depth of flow in main is determine from D_p/D_f = 0.1299

Depth of flow, D_p = 0.1299 x D_f = 1.04 in

From partial flow table for Q_p/Q_f = 0.0379, flow velocity in main is determined from V_p/V_f = 0.4996

Flow Velocity, Vp = 0.4996 x V_f = 5.3 ft/s

Plan 1

PORTLAND RETIREMENT RESIDENCE

802 OCEAN AVENUE
PORTLAND, ME

APPLICANT:

HAWTHORN RETIREMENT GROUP
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

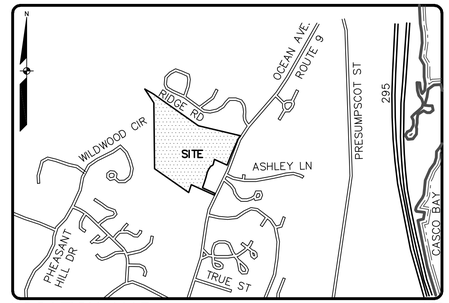
ENGINEER/SURVEYOR:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel. 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel. 207-783-5656

ARCHITECT/AGENT

lenity architecture
3150 Kettle Court SE, Salem, Oregon 97301
p 503 399 1090 f 503 399 0565 w lenityarchitecture.com

SCALE: 1" = 60'



LOCATION MAP NTS

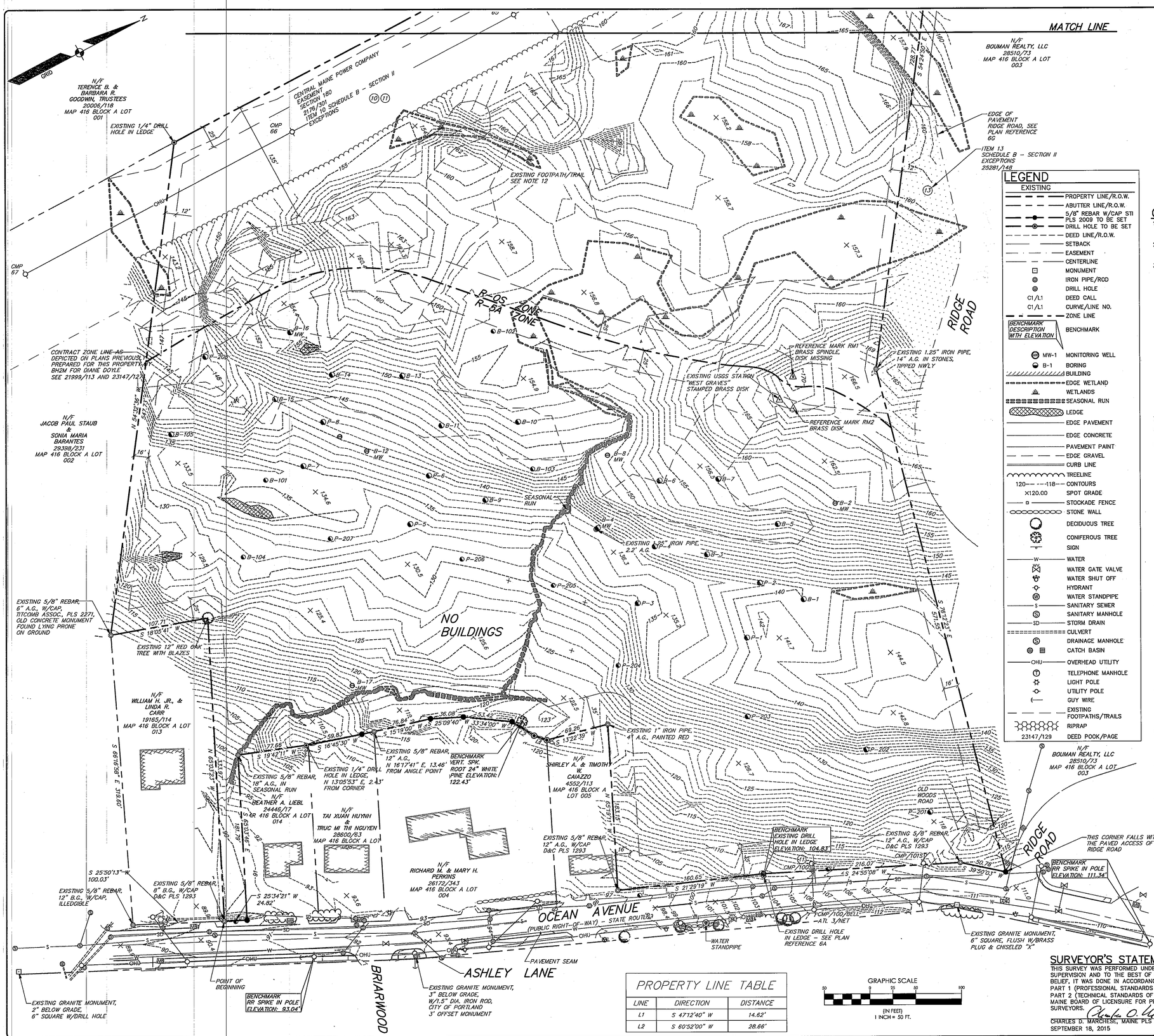
SHEET INDEX

SHEET	TITLE
1	COVER SHEET
2	ALTA-ACSM LAND TITLE SURVEY
3	ALTA-ACSM LAND TITLE SURVEY
4	OVERALL SITE PLAN
5	SITE PLAN
6	GRADING PLAN
7	UTILITY PLAN
8	BOX CULVERT PLAN AND SECTION
9	DETAILS
10	DETAILS
11	DETAILS
12	DETAILS
13	STORMTECH STORMWATER DETAILS
14	OCEAN AVENUE SIDEWALK PLAN

1 OF 1 PRE DEVELOPMENT WATERSHED PLAN
2 OF 2 POST DEVELOPMENT WATERSHED PLAN

REVISED THROUGH 11-20-15

14432C.dwg, TAB:C



LEGEND

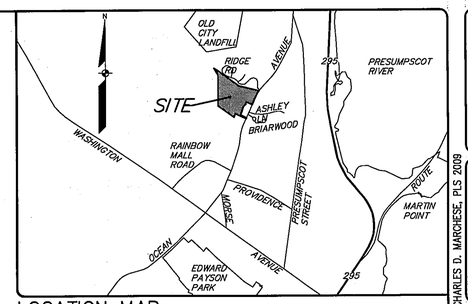
EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- 5/8" REBAR W/CAP STI PLS 2009 TO BE SET
- DRILL HOLE TO BE SET
- DEED LINE/R.O.W.
- SETBACK
- EASEMENT
- CENTERLINE
- MONUMENT
- IRON PIPE/ROD
- DRILL HOLE
- C1 /L1 DEED CALL
- C1 /L1 CURVE/LINE NO.
- ZONE LINE
- BENCHMARK DESCRIPTION WITH ELEVATION — BENCHMARK
- MW-1 MONITORING WELL
- B-1 BORING
- BUILDING
- EDGE WETLAND
- WETLANDS
- SEASONAL RUN
- LEDGE
- EDGE PAVEMENT
- EDGE CONCRETE
- PAVEMENT PAINT
- EDGE GRAVEL
- CURB LINE
- TREELINE
- 120 118 CONTOURS
- ×120.00 SPOT GRADE
- STOCKADE FENCE
- STONE WALL
- DECIDUOUS TREE
- CONIFEROUS TREE
- SIGN
- W WATER
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- W WATER STANDPIPE
- S SANITARY SEWER
- S SANITARY MANHOLE
- SD STORM DRAIN
- CULVERT
- S DRAINAGE MANHOLE
- CATCH BASIN
- OHU OVERHEAD UTILITY
- T TELEPHONE MANHOLE
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- EXISTING FOOTPATHS/TRAILS
- RIPRAP
- 23147/123 DEED POOK/PAGE

PROPERTY LINE TABLE

LINE	DIRECTION	DISTANCE
L1	S 47°12'40" W	14.62'
L2	S 60°52'00" W	28.66'

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.



LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS GRAVES HILL LAND COMPANY, LLC BY DEED DATED JULY 1, 2004 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 21500, PAGE 269.
2. THE PROPERTY IS SHOWN AS LOTS A006, A007 AND A021 ON TAX MAP 416 AND LOT A007 ON TAX MAP 411 OF THE CITY OF PORTLAND TAX MAPS AND IS LOCATED IN THE BOTH THE R-5A RESIDENTIAL ZONE AND R-OS RECREATION AND OPEN SPACE ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE R5A AND ROS DISTRICTS ARE AS FOLLOWS:

	R5A	ROS
LOCUS AREA WITHIN ZONING DISTRICT:	10.171 ACRES	8.157 ACRES
MINIMUM LOT SIZE:	1,600 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONTAGE:	50 FEET	N/A
MAXIMUM LOT COVERAGE:	30%	25%
MINIMUM LOT WIDTH:	60 FEET	N/A
MINIMUM RECREATION OPEN SPACE:	200 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONT YARD:	35 FEET	25 FEET
MINIMUM SIDE YARD:	16 FEET	12 FEET
MINIMUM REAR YARD:	25 FEET	25 FEET
MAXIMUM BUILDING HEIGHT:	55 FEET	N/A

* SEE BUILDING LENGTH GREATER THAN 100'.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 798,387.448 SQUARE FEET OR 18.328 ACRES.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN DECEMBER 2014 AND JANUARY 2015.
6. PLAN REFERENCES:

A. "PLAN SHOWING A BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY MADE FOR DIANE DOYLE. (MAILING ADDRESS: 16 TIFFANY LANE, SACO, ME 04072) PARCEL LOCATED AT OCEAN AVENUE, PORTLAND, MAINE" DATED JULY 8, 2002 AND REVISED THROUGH FEBRUARY 11, 2005 BY DOW & COULOMBE, INC, SHEETS 1 & 2 OF 2. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 204, PAGE 293 & PAGE 294.

B. "ASBUILT SURVEY PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED NOVEMBER 29, 2005 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180.

C. "BOUNDARY SURVEY & LOT DIVISION 752 OCEAN AVENUE, PORTLAND, MAINE MADE FOR DONALD ANSPACH, 752 OCEAN AVENUE, PORTLAND, MAINE" DATED MAY 25, 2004 AND REVISED THROUGH JUNE 18, 2008 BY TITCOMB ASSOCIATES, JOB NO. 87114.1.

D. "STANDARD BOUNDARY SURVEY PLAN OF PROPERTY OCEAN AVENUE, PORTLAND, MAINE MADE FOR THE FINCH GROUP, 160 FEDERAL STREET, BOSTON, MA." DATED JULY 30, 1992 BY TITCOMB ASSOCIATES, JOB NO. 87114M.

E. "OCEAN AVENUE STORM DRAIN AND SANITARY SEWER EXTENSION OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR OCEAN RIDGE REALTY, LLC, 91 OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED APRIL 3, 2001 AND REVISED THROUGH DECEMBER 3, 2002 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180, SHEETS 15 & 16 OF 18 SHEETS.

F. "OCEAN AVENUE RECONSTRUCTION PHASE 3 AND PHASE 4, PLAN AND PROFILE STA. 122+00 TO STA. 127+50" DATED AUGUST 31, 2007 BY CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS ENGINEERING SECTION, PROJECT NO. C04517, SHEETS 6 & 7 OF 23 SHEETS

G. "AMENDED SUBDIVISION PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED MARCH 6, 2001 AND REVISED THROUGH MARCH 13, 2003 BY SEBAGO TECHNICS, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 203, PAGE 264 AND SUPERCEDES A PLAN RECORDED IN PLAN BOOK 202, PAGE 725.

7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON WERE OBSERVED IN NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS. ELEVATIONS HAVE BEEN CONVERTED TO NGVD29 UTILIZING THE U.S.ARMY CORPS OF ENGINEERS CORPSCON 6.0.1 SOFTWARE. THE CONVERSION IN THIS VICINITY IS 0.70 FEET HIGHER THAN NAVD88. ELEVATIONS ARE TIED TO THE CITY OF PORTLAND, MAINE VERTICAL DATUM.
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 THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051 0007 C, HAVING AN EFFECTIVE DATE OF DECEMBER 8, 1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS AN UNSHADED ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOODPLAIN.
10. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN NOVEMBER 2001 AND REVIEWED IN APRIL 2014 BY GARY M. FULLERTON, CERTIFIED SOIL SCIENTIST OF SEBAGO TECHNICS, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. WETLAND FLAGS WITHIN THE PROPOSED DEVELOPMENT AREAS WERE LOCATED BY GROUND SURVEY. WETLAND FLAGS OUTSIDE OF THE PROPOSED DEVELOPMENT AREA WERE LOCATED USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY. ALL GPS LOCATED POINTS HAVE A VARYING DEGREE OF ACCURACY AND MAY NOT REPRESENT THE ACTUAL FIELD LOCATION.
11. WITH REFERENCE TO ITEM 18 OF THE ALTA TABLE A, THE AREA ADJOINING THE NORTHERLY AND WESTERLY SIDELINES OF LAND OF CAIAZZO IS CLUTTERED WITH CONSTRUCTION AND RESIDENTIAL DEBRIS, TWO OLD VEHICLES AND ASSORTED HOUSEHOLD LITTER.

    THE AREA IN THE VICINITY OF THE USGS CONTROL DISKS IS ALSO BEING USED AS A DUMP SITE FOR LAWN DEBRIS BY THE ADJOINING CONDOMINIUM PROJECT.
12. EXISTING FOOTPATHS/TRAILS ARE AS DEPICTED HEREON, THEY ARE TYPICALLY ±2 FEET WIDE.

SURVEYOR'S CERTIFICATION

TO HAWTHORN DEVELOPMENT, LLC OR ITS ASSIGNEE AND FIDELITY NATIONAL TITLE INSURANCE COMPANY:
FILE NO. 14030089 (REV. 1-12-15)

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDE ITEMS 1,2,3,4,5,6a,6b,8,11a,11b,13,14,16,17,18,19,20a AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JANUARY 7, 2015.

DATE: SEPTEMBER 18, 2015

CHARLES D. MARCHESE, MAINE PLS 2009
SEBAGO TECHNICS, INC.

SURVEYOR'S STATEMENT

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT WAS DONE IN ACCORDANCE WITH CHAPTER 90, PART 1 (PROFESSIONAL STANDARDS OF PRACTICE) AND PART 2 (TECHNICAL STANDARDS OF PRACTICE) OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS.

CHARLES D. MARCHESE, MAINE PLS 2009
SEPTEMBER 18, 2015

Plan 2

STATE OF MAINE * CHARLES D. MARCHESE * NO. 2009 * PROFESSIONAL LAND SURVEYOR

CHARLES D. MARCHESE, PLS 2009

DESIGNED	CHECKED
-	CDM

REV:	BY:	DATE:	STATUS:
F	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND
E	CDM	5-04-15	ADDED FOOTPATHS/TRAILS & CORRESPONDING NOTE 12
D	CDM	2-26-15	REVISED UTILITIES IN OCEAN AVENUE
C	CDM	1-23-15	REVISED BORINGS/PROBES
B	CDM	1-23-15	PLAN REVISED TO REFLECT TITLE COMMITMENT 14030089 REVISED 1-12-15
A	CDM	1-07-15	ISSUED TO CLIENT FOR REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC., ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A, South Portland, ME 04106 Tel. 207-200-2100
250 Goddard Rd. Suite B, Lewiston, ME 04240 Tel. 207-783-9536

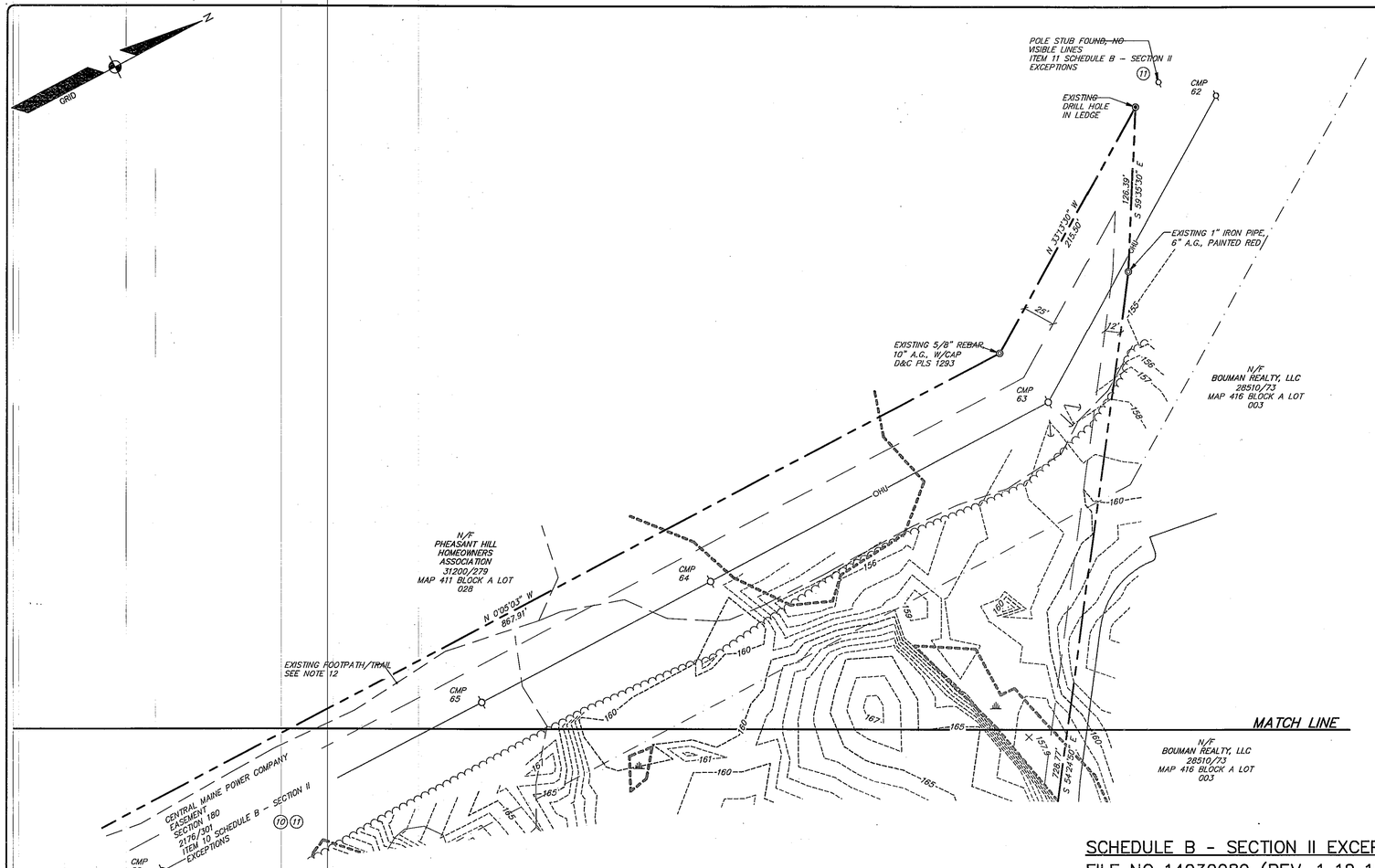
ALTA-ACSM LAND TITLE SURVEY
OF LAND OWNED BY:
GRAVES HILL LAND COMPANY, LLC
802-838 OCEAN AVENUE
PORTLAND, MAINE 04103
PREPARED FOR:
HAWTHORN DEVELOPMENT, LLC
9310 NE VANCOUVER MALL DRIVE, SUITE 200
VANCOUVER, WASHINGTON 98662-8210

RECORD OWNER: SEE NOTE 1.

PROJECT NO.	SCALE
14432	1" = 50'

SHEET 2 OF 14

14432SD.dwg, TAB:14432LTS1



LEGAL DESCRIPTION

A CERTAIN LOT OR PARCEL OF LAND LOCATED ON THE WESTERLY SIDELINE OF OCEAN AVENUE, STATE HIGHWAY 9, IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND, STATE OF MAINE, SAID LOT OR PARCEL OF LAND BEING MORE PARTICULARLY BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT AN EXISTING 5/8" REBAR, 8" BELOW GRADE ON THE APPARENT WESTERLY SIDELINE OF OCEAN AVENUE AT LAND NOW OR FORMERLY OF WILLIAM H. CARR, JR. AND LINDA R. CARR, AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD) IN BOOK 19165, PAGE 114;

THENCE N 65°03'23" W, ALONG LAND OF SAID CARR, A DISTANCE OF 333.97 FEET TO AN EXISTING BLAZED 12" RED OAK TREE;

THENCE S 18°05'41" W, ALONG LAND NOW OR FORMERLY OF CARR, A DISTANCE OF 107.71 FEET TO AN EXISTING 5/8" REBAR, 6" ABOVE GRADE WITH CAP INSCRIBED TITCOMB ASSOCIATES, PLS 2271 AT LAND NOW OR FORMERLY OF JACOB PAUL STAUB AND SONIA MARIA BARANTES AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 29398, PAGE 231;

THENCE N 54°32'36" W ALONG LAND NOW OR FORMERLY OF STAUB AND BARANTES, A DISTANCE OF 547.73 FEET TO AN EXISTING DRILL HOLE IN LEDGE AT LAND NOW OR FORMERLY OF TERENCE BJ GOODWIN AND BARBARA R. GOODWIN, TRUSTEES AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 20006, PAGE 118;

THENCE N 00°05'03" W, ALONG LAND NOW OR FORMERLY OF GOODWIN AND LAND NOW OR FORMERLY OF PHEASANT HILL HOMEOWNERS ASSOCIATION AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 31200, PAGE 279, A DISTANCE OF 867.91 FEET TO AN EXISTING 5/8" REBAR, 10" ABOVE GRADE WITH CAP INSCRIBED DOW & COULOMBE, PLS 1293;

THENCE N 33°13'30" W, ALONG LAND NOW OR FORMERLY OF PHEASANT HILL HOMEOWNERS ASSOCIATION, A DISTANCE OF 215.50 FEET TO AN EXISTING DRILL HOLE IN LEDGE AT LAND NOW OR FORMERLY OF BOUMAN REALTY, LLC AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 28510, PAGE 73;

THENCE S 59°35'30" E, ALONG LAND NOW OR FORMERLY OF BOUMAN REALTY, LLC, A DISTANCE OF 126.39 FEET TO AN EXISTING 1" IRON PIPE, 6" ABOVE GRADE, PAINTED RED;

THENCE S 54°24'50" E, ALONG LAND NOW OR FORMERLY OF BOUMAN REALTY, LLC, A DISTANCE OF 728.77 FEET TO AN EXISTING 1.25" IRON PIPE, 1/4" ABOVE GRADE IN STONES, TIPPED NORTHWESTERLY;

THENCE S 76°12'23" E, ALONG LAND NOW OR FORMERLY OF BOUMAN REALTY, LLC, A DISTANCE OF 571.55 FEET TO A 5/8" REBAR WITH CAP INSCRIBED "STI PLS 2009" TO BE SET ON THE WESTERLY SIDELINE OF OCEAN AVENUE;

THENCE S 39°50'03" W, ALONG THE WESTERLY SIDELINE OF OCEAN AVENUE, A DISTANCE OF 50.78 FEET TO AN EXISTING 5/8" REBAR, 12" ABOVE GRADE, WITH CAP INSCRIBED DOW & COULOMBE, PLS 1293;

THENCE S 24°55'08" W, ALONG THE WESTERLY SIDELINE OF OCEAN AVENUE, A DISTANCE OF 216.07 FEET TO A 5/8" REBAR WITH CAP INSCRIBED "STI PLS 2009" TO BE SET;

THENCE S 21°29'19" W, ALONG THE WESTERLY SIDELINE OF OCEAN AVENUE, A DISTANCE OF 160.65 FEET TO AN EXISTING EXISTING 5/8" REBAR, 12" ABOVE GRADE WITH CAP INSCRIBED DOW & COULOMBE, PLS 1293 AT LAND NOW OR FORMERLY OF SHIRLEY A. CAIAZZO AND TIMOTHY W. CAIAZZO AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 4552, PAGE 113;

THENCE N 65°19'11" W, ALONG LAND NOW OR FORMERLY ALONG LAND NOW OR FORMERLY OF CAIAZZO, A DISTANCE OF 183.15 FEET TO AN EXISTING 1" IRON PIPE, 4" ABOVE GRADE , PAINTED RED;

THENCE S 13°22'39" W, ALONG LAND NOW OR FORMERLY OF CAIAZZO, A DISTANCE OF 69.26 FEET TO A DRILL HOLE TO BE SET IN REMAINS OF A STONE WALL AT LAND NOW OR FORMERLY OF RICHARD M. PERKINS AND MARY H. PERKINS AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 26172, PAGE 343;

THENCE S 47°12'40" W, ALONG LAND NOW OR FORMERLY OF PERKINS AND THE REMAINS OF A STONE WALL, A DISTANCE OF 14.62 FEET TO A DRILL HOLE TO BE SET;

THENCE S 60°52'00" W, ALONG LAND NOW OR FORMERLY OF PERKINS AND THE REMAINS OF A STONE WALL, A DISTANCE OF 28.66 FEET TO A 5/8" REBAR WITH CAP INSCRIBED "STI PLS 2009" TO BE SET;

LEGAL DESCRIPTION CONTINUED

THENCE S 33°34'00" W, ALONG LAND NOW OR FORMERLY OF PERKINS, A DISTANCE OF 53.42 FEET TO A 5/8" REBAR WITH CAP INSCRIBED "STI PLS 2009" TO BE SET;

THENCE S 25°09'40" W, ALONG LAND NOW OR FORMERLY OF PERKINS AND THE REMAINS OF A STONE WALL, A DISTANCE OF 36.08 FEET TO A 5/8" REBAR WITH CAP INSCRIBED "STI PLS 2009" TO BE SET;

THENCE S 15°19'00" W, ALONG LAND NOW OR FORMERLY OF PERKINS AND LAND NOW OR FORMERLY OF TAI XUAN HUYNH AND TRUC MI THI NGUYEN AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 28600, PAGE 63, A DISTANCE OF 76.84 FEET TO A 5/8" REBAR WITH CAP INSCRIBED "STI PLS 2009" TO BE SET, FROM WHICH AN EXISTING 5/8" REBAR, 12" ABOVE GRADE BEARS N 16°17'41" E, A DISTANCE OF 13.46 FEET;

THENCE S 16°45'30" W, ALONG LAND OF HUYNH AND NGUYEN AND THE REMAINS OF A STONE WALL, A DISTANCE OF 59.83 FEET TO A 5/8" REBAR WITH CAP INSCRIBED "STI PLS 2009" TO BE SET AT LAND NOW OR FORMERLY OF HEATHER A. LIEBL AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 24446, PAGE 17;

THENCE S 19°42'111" W, ALONG LAND NOW OR FORMERLY OF LIEBL, A DISTANCE OF 77.66 FEET TO AN EXISTING 5/8" REBAR, 18" ABOVE GRADE IN A SEASONAL RUN;

THENCE S 65°03'46" E, ALONG LAND NOW OR FORMERLY OF LIEBL, A DISTANCE OF 181.79 FEET TO A 5/8" REBAR WITH CAP INSCRIBED "STI PLS 2009" TO BE SET ON THE WESTERLY SIDELINE OF OCEAN AVENUE;

THENCE S 25°34'21" W, ALONG THE WESTERLY SIDELINE OF OCEAN AVENUE, A DISTANCE OF 24.82 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ARE BASED ON GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802 – NAD83.

THE HEREIN DESCRIBED LOT OR PARCEL OF LAND CONTAINS APPROXIMATELY 798,387.448 SQUARE FEET OR 18.328 ACRES.

THE HEREIN DESCRIBED LOT OR PARCEL OF LAND IS SUBJECT TO AN EASEMENT AS DEPICTED HEREON GRANTED TO CENTRAL MAINE POWER COMPANY AS DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 2176, PAGE 301.

THE HEREIN DESCRIBED LOT OR PARCEL OF LAND IS BENEFITED BY AN EASEMENT AS DEPICTED HEREON AND DESCRIBED IN A DEED RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 25281, PAGE 148.

THE HEREIN DESCRIBED LOT OR PARCEL OF LAND MAY BE SUBJECT TO RIGHTS AND PRIVILEGES ASSOCIATED WITH THE USGS CONTROL POINTS LOCATED WITHIN THE BOUNDS OF THE LOCUS PROPERTY.

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 INCH = 50 FT.

LEGEND

EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- 5/8" REBAR W/CAP STI PLS 2009 TO BE SET
- DRILL HOLE TO BE SET
- DEED LINE/R.O.W.
- SETBACK
- EASEMENT
- CENTERLINE
- MONUMENT
- IRON PIPE/ROD
- DRILL HOLE
- C1/L1 DEED CALL
- C1/L1 CURVE/LINE NO.
- ZONE LINE
- BENCHMARK DESCRIPTION WITH ELEVATION — BENCHMARK
- MW-1 MONITORING WELL
- B-1 BORING
- BUILDING
- EDGE WETLAND
- WETLANDS
- SEASONAL RUN
- LEDGE
- EDGE PAVEMENT
- EDGE CONCRETE
- PAVEMENT PAINT
- EDGE GRAVEL
- CURB LINE
- TREELINE
- 120 118 CONTOURS
- X120.00 SPOT GRADE
- STOCKADE FENCE
- STONE WALL
- DECIDUOUS TREE
- CONIFEROUS TREE
- SIGN
- W WATER
- WATER GATE VALVE
- WATER SHUT OFF
- HYDRANT
- WATER STANDPIPE
- S SANITARY SEWER
- SANITARY MANHOLE
- SD STORM DRAIN
- CULVERT
- DRAINAGE MANHOLE
- CATCH BASIN
- OHU OVERHEAD UTILITY
- TELEPHONE MANHOLE
- LIGHT POLE
- UTILITY POLE
- GUY WIRE
- EXISTING FOOTPATHS/TRAILS
- RIPRAP
- 23147/129 DEED POOK/PAGE

SCHEDULE B - SECTION II EXCEPTIONS
FILE NO 14030089 (REV. 1-12-15)

ITEMS 1 THROUGH ITEM 7 INCLUSIVE

THESE ARE NOT SURVEY ISSUES AND ARE NOT ADDRESSED BY SEBAGO TECHNICS, INC.

ITEM 8

IF THE LAND IS A CONDOMINIUM UNIT: ...

THE LAND IS NOT A CONDOMINIUM UNIT. HOWEVER, THE LOCUS HAS RIGHTS OVER A PORTION OF THE OCEAN RIDGE CONDOMINIUM PROPERTY, SEE ITEM 13 AND 25281/148.

ITEM 9

TITLE TO RIGHTS OF THE PUBLIC AND OTHERS ENTITLED THERETO IN AND TO ANY PORTION OF THE INSURED PREMISES LOCATED WITHIN THE BOUNDS OF ADJACENT STREETS, ROADS AND WAYS.

THE STREET LINE OF OCEAN AVENUE IS AS DEPICTED HEREON. RIDGE ROAD IS AS DEPICTED ON PLAN REFERENCE 6G HEREON.

ANY RIGHTS THE UNITED STATES GOVERNMENT MAY HAVE IN THE USGS DISK AND ASSOCIATED REFERENCE MARKS AND ACCESS THERETO IS UNKNOWN. NO DATA FURNISHED OR SHOWN ON PREVIOUS SURVEYS.

ITEM 10

RIGHTS AND EASEMENTS GRANTED FROM FREDERICK T. KNOWLES, GEORGE WILSON, ADAM W. WILSON AND ALICE HANNAH PALMER TO CENTRAL MAINE POWER COMPANY BY DEED DATED MARCH 29, 1954 AND RECORDED IN BOOK 2176, PAGE 301.

THIS EASEMENT IS LOCATED AS DEPICTED HEREON AND RUNS ALONG THE WESTERLY BOUNDARY.

ITEM 11

STATE OF FACTS SHOWN ON PLAN OF SURVEY ENTITLED "PLAN SHOWING BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY MADE FOR DIANE DOYLE, RECORD OWNER ...". SEE PLAN REFERENCE 6A HEREON.

SEBAGO TECHNICS, INC. HAS EXAMINED THIS PLAN AND HAS RETRACED THE BOUNDARY, TOPOGRAPHIC AND CULTURAL FEATURES AS DEPICTED HEREON. i) THE UTILITY EASEMENT ALONG NORTHERN PORTION OF THE LAND BOOK 2176, PAGE 301 IS DEPICTED HEREON; ii)NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY EASEMENT IS NOT LOCATED ON THE LOCUS PROPERTY; iii) OCEAN AVENUE IS AS DEPICTED HEREON AND iv) UTILITY LINES AND APPURTENANCES ARE DEPICTED HEREON ALONG THE LENGTH OF OCEAN AVENUE.

ITEM 12

TERMS AND CONDITIONS OF CONDITIONAL ZONE AGREEMENT GRAVES HILL LAND COMPANY, LLC ...

THESE TWO DOCUMENTS AFFECT THE ENTIRE PROPERTY AND RUN WITH THE LAND.

ITEM 13

TERMS AND CONDITIONS OF EASEMENT AGREEMENT FROM OCEAN RIDGE REALTY, LLC TO GRAVES HILL LAND COMPANY, LLC DATED JULY 10, 2007 AND RECORDED IN BOOK 25281, PAGE 148. THE AREA IS IDENTIFIED HEREON WITH HATCHING ALONG LAND OF BOUMAN REALTY, LLC.

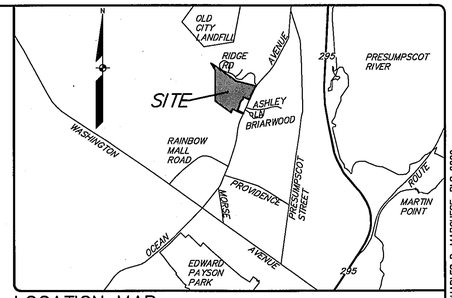
ITEM 14

STATE OF FACTS SHOWN ON PLAN OF SURVEY ENTITLED "ALTA/ACSM LAND TITLE SURVEY OF LAND OWNED BY GRAVES HILL LAND COMPANY, LLC, PREPARED FOR HAWTHORN DEVELOPMENT, LLC" BY SEBAGO TECHNICS, INC, DATED JANUARY 7, 2015, INCLUDING: i) UTILITY EASEMENT ALONG NORTHWESTERLY PORTION OF THE LAND, BOOK 2176, PAGE 301; ii) OCEAN AVENUE; iii) UTILITY POLE AND LINE OFF OCEAN AVENUE; iv) ENCROACHMENT OF NORTHEASTERLY CORNER OF THE LAND INTO THE PAVED ACCESS OF RIDGE ROAD; v) SIDELINE SETBACKS; vi) CONTRACT ZONE LINES; vii) EASEMENT AREA ALONG NORTHERLY PORTION OF THE LAND, BOOK 25281, PAGE 148; viii) NOTE #8 THAT NOT ALL UTILITIES MAY BE DEPICTED ON THE PLAN; ix) NOTE #11 THAT ABUTTERS CAIAZZO AND ADJOINING CONDOMINIUM PROJECT MAY BE USING THE LAND AS A DUMP SITE; AND x) TRAILS RUNNING GENERALLY FROM THE WESTERLY SIDE OF THE PROPERTY THROUGH THE CENTRAL MAINE POWER COMPANY EASEMENT INTO THE ADJOINING CONDOMINIUM PROJECT WERE FIELD LOCATED AS SHOWN HEREON. NO RECORD EVIDENCE WAS FOUND ESTABLISHING RIGHTS IN OR TO THESE TRAILS.

SURVEYOR'S STATEMENT

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT WAS DONE IN ACCORDANCE WITH CHAPTER 90, PART 1 (PROFESSIONAL STANDARDS OF PRACTICE) AND PART 2 (TECHNICAL STANDARDS OF PRACTICE) OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS.

CHARLES D. MARCHESE, MAINE PLS 2009
SEPTEMBER 18, 2015



LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS GRAVES HILL LAND COMPANY, LLC BY DEED DATED JULY 1, 2004 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 21500, PAGE 269.
2. THE PROPERTY IS SHOWN AS LOTS A006, A007 AND A021 ON TAX MAP 416 AND LOT A007 ON TAX MAP 411 OF THE CITY OF PORTLAND TAX MAPS AND IS LOCATED IN THE BOTH THE R-5A RESIDENTIAL ZONE AND R-OS RECREATION AND OPEN SPACE ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE R5A AND ROS DISTRICTS ARE AS FOLLOWS:

	R5A	ROS
LOCUS AREA WITHIN ZONING DISTRICT:	10.171 ACRES	8.157 ACRES
MINIMUM LOT SIZE:	1,600 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONTAGE:	50 FEET	N/A
MAXIMUM LOT COVERAGE:	30%	25%
MINIMUM LOT WIDTH:	60 FEET	N/A
MINIMUM RECREATION OPEN SPACE:	200 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONT YARD:	35 FEET	25 FEET
MINIMUM SIDE YARD:	18 FEET	12 FEET
MINIMUM REAR YARD:	25 FEET	25 FEET
MAXIMUM BUILDING HEIGHT:	55 FEET	N/A

* SEE BUILDING LENGTH GREATER THAN 100'.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 798,387.448 SQUARE FEET OR 18.328 ACRES.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN DECEMBER 2014 AND JANUARY 2015.
6. PLAN REFERENCES:

A. "PLAN SHOWING A BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY MADE FOR DIANE DOYLE, (MAILING ADDRESS: 16 TIFFANY LANE, SACO, ME 04072) PARCEL LOCATED AT OCEAN AVENUE, PORTLAND, MAINE" DATED JULY 8, 2002 AND REVISED THROUGH FEBRUARY 11, 2005 BY DOW & COULOMBE, INC, SHEETS 1 & 2 OF 2. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 204, PAGE 293 & PAGE 294.

B. "ASBUILT SURVEY PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED NOVEMBER 29, 2005 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180.

C. "BOUNDARY SURVEY & LOT DIVISION 752 OCEAN AVENUE, PORTLAND, MAINE MADE FOR DONALD ANSPACH, 752 OCEAN AVENUE, PORTLAND, MAINE" DATED MAY 25, 2004 AND REVISED THROUGH JUNE 18, 2008 BY TITCOMB ASSOCIATES, JOB NO. 87114.1.

D. "STANDARD BOUNDARY SURVEY PLAN OF PROPERTY OCEAN AVENUE, PORTLAND, MAINE MADE FOR THE FINCH GROUP, 160 FEDERAL STREET, BOSTON, MA." DATED JULY 30, 1992 BY TITCOMB ASSOCIATES, JOB NO. 87114M.

E. "OCEAN AVENUE STORM DRAIN AND SANITARY SEWER EXTENSION OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR OCEAN RIDGE REALTY, LLC, 91 OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED APRIL 3, 2001 AND REVISED THROUGH DECEMBER 3, 2002 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180, SHEETS 15 & 16 OF 18 SHEETS.

F. "OCEAN AVENUE RECONSTRUCTION PHASE 3 AND PHASE 4, PLAN AND PROFILE STA. 122+00 TO STA. 127+50" DATED AUGUST 31, 2007 BY CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS ENGINEERING SECTION, PROJECT NO. C04517, SHEETS 6 & 7 OF 23 SHEETS

G. "AMENDED SUBDIVISION PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED MARCH 6, 2001 AND REVISED THROUGH MARCH 13, 2003 BY SEBAGO TECHNICS, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 203, PAGE 264 AND SUPERCEDES A PLAN RECORDED IN PLAN BOOK 202, PAGE 725.

7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON WERE OBSERVED IN NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS. ELEVATIONS HAVE BEEN CONVERTED TO NGVD29 UTILIZING THE U.S.ARMY CORPS OF ENGINEERS CORPSCON 6.0.1 SOFTWARE. THE CONVERSION IN THIS VICINITY IS 0.70 FEET HIGHER THAN NAVD88. ELEVATIONS ARE TIED TO THE CITY OF PORTLAND, MAINE VERTICAL DATUM.
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 THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051 0007 C, HAVING AN EFFECTIVE DATE OF DECEMBER 8, 1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS AN UNSHADED ZONE X, AREA DETERMINED TO BE OUTSIDE THE 500-YEAR FLOODPLAIN.
10. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN NOVEMBER 2001 AND REVIEWED IN APRIL 2014 BY GARY M. FULLERTON, CERTIFIED SOIL SCIENTIST OF SEBAGO TECHNICS, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. WETLAND FLAGS WITHIN THE PROPOSED DEVELOPMENT AREAS WERE LOCATED BY GROUND SURVEY. WETLAND FLAGS OUTSIDE OF THE PROPOSED DEVELOPMENT AREA WERE LOCATED USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY. ALL GPS LOCATED POINTS HAVE A VARYING DEGREE OF ACCURACY AND MAY NOT REPRESENT THE ACTUAL FIELD LOCATION.
11. WITH REFERENCE TO ITEM 18 OF THE ALTA TABLE A, THE AREA ADJOINING THE NORTHERLY AND WESTERLY SIDELINES OF LAND OF CAIAZZO IS CLUTTERED WITH CONSTRUCTION AND RESIDENTIAL DEBRIS. TWO OLD VEHICLES AND ASSORTED HOUSEHOLD LITTER.

THE AREA IN THE VICINITY OF THE USGS CONTROL DISKS IS ALSO BEING USED AS A DUMP SITE FOR LAWN DEBRIS BY THE ADJOINING CONDOMINIUM PROJECT.

12. EXISTING FOOTPATHS/TRAILS ARE AS DEPICTED HEREON, THEY ARE TYPICALLY ±2 FEET WIDE.

SURVEYOR'S CERTIFICATION

TO HAWTHORN DEVELOPMENT, LLC OR ITS ASSIGNEE AND FIDELITY NATIONAL TITLE INSURANCE COMPANY:
FILE NO. 14030089 (REV. 1-12-15)

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDE ITEMS 1,2,3,4,5,6a,6b,8,11a,11b,13,14,16,17,18,19,20a AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JANUARY 7, 2015.

DATE: SEPTEMBER 18, 2015

CHARLES D. MARCHESE, MAINE PLS 2009
SEBAGO TECHNICS, INC.

Plan 3

STATE OF MAINE * CHARLES D. MARCHESE * 10129 * REGISTERED PROFESSIONAL LAND SURVEYOR

CHARLES D. MARCHESE, PLS 2009

DESIGNED	CHECKED
-	CDM

REV	BY:	DATE:	STATUS:
F.	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND
E.	CDM	5-04-15	ADDED FOOTPATHS/TRAILS & CORRESPONDING NOTE 12
D.	CDM	2-26-15	REVISED UTILITIES IN OCEAN AVENUE
C.	CDM	1-23-15	REVISED BORINGS/PROBES
B.	CDM	1-23-15	PLAN REVISED TO REFLECT TITLE COMMITMENT 14030089 REVISED 1-12-15
A.	CDM	1-07-15	ISSUED TO CLIENT FOR REVIEW

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SEBAGO TECHNICS
75 John Roberts Rd. Suite 1A, South Portland, ME 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B, Lewiston, ME 04240 Tel: 207-783-9556
WWW.SEBAGOTECHNICS.COM

ALTA-ACSM LAND TITLE SURVEY
OF LAND OWNED BY:
GRAVES HILL LAND COMPANY, LLC

PREPARED FOR:
HAWTHORN DEVELOPMENT, LLC
9310 NE VANCOUVER MALL DRIVE, SUITE 200
VANCOUVER, WASHINGTON 98662-8210

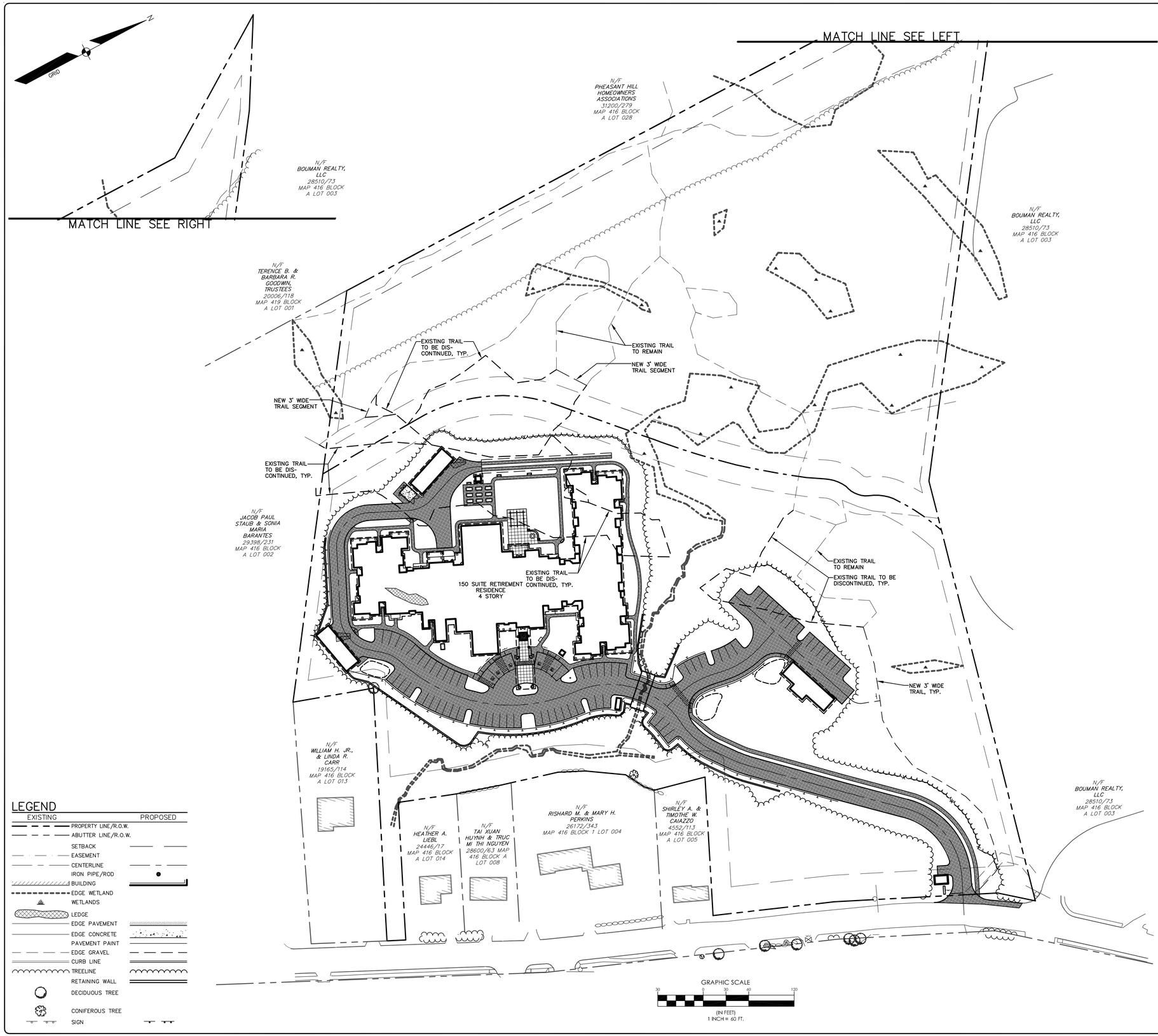
802-838 OCEAN AVENUE
PORTLAND, MAINE 04103

RECORD OWNER: SEE NOTE 1.

PROJECT NO.	SCALE
14432	1" = 50'

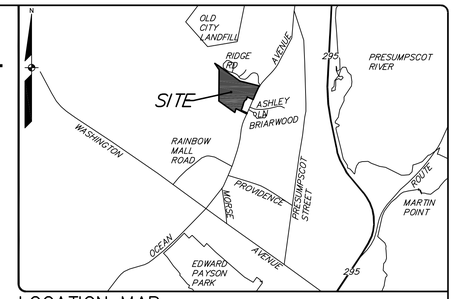
SHEET 3 OF 14

14432SC.dwg, TAB:14432LTS2



LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
SETBACK	
EASEMENT	
CENTERLINE	
IRON PIPE/ROD	
BUILDING	
EDGE WETLAND	
WETLANDS	
LEDGE	
EDGE PAVEMENT	
EDGE CONCRETE	
PAVEMENT PAINT	
EDGE GRAVEL	
CURB LINE	
TREELINE	
RETAINING WALL	
DECIDUOUS TREE	
CONIFEROUS TREE	
SIGN	



LOCATION MAP

N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS GRAVES HILL LAND COMPANY, LLC BY DEED DATED JULY 1, 2004 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 21500, PAGE 269.
2. THE PROPERTY IS SHOWN AS LOTS A006, A007 AND A021 ON TAX MAP 416 AND LOT A007 ON TAX MAP 411 OF THE CITY OF PORTLAND TAX MAPS AND IS LOCATED IN THE BOTH THE R-5A RESIDENTIAL ZONE AND R-OS RECREATION AND OPEN SPACE ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE R5A AND ROS DISTRICTS ARE AS FOLLOWS:

	R5A	ROS
LOCUS AREA WITHIN ZONING DISTRICT:	10.171 ACRES	8.157 ACRES
MINIMUM LOT SIZE:	1,600 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONTAGE:	50 FEET	N/A
MAXIMUM LOT COVERAGE:	30%	25%
MINIMUM LOT WIDTH:	60 FEET	N/A
MINIMUM RECREATION OPEN SPACE:	200 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONT YARD:	35 FEET	25 FEET
MINIMUM SIDE YARD:	16 FEET	12 FEET
MINIMUM REAR YARD:	25 FEET	25 FEET
MAXIMUM BUILDING HEIGHT:	55 FEET	N/A

- SEE BUILDING LENGTH GREATER THAN 100'.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 798,387.448 SQUARE FEET OR 18.328 ACRES.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN DECEMBER 2014 AND JANUARY 2015.
6. PLAN REFERENCES:

   A. "PLAN SHOWING A BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY MADE FOR DIANE DOYLE, (MAILING ADDRESS: 16 TIFFANY LANE, SACO, ME 04072) PARCEL LOCATED AT OCEAN AVENUE, PORTLAND, MAINE" DATED JULY 8, 2002 AND REVISED THROUGH FEBRUARY 11, 2005 BY DOW & COULOMBE, INC. SHEETS 1 & 2 OF 2. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 204, PAGE 293 & PAGE 294.

   B. "ASBUILT SURVEY PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED NOVEMBER 29, 2005 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180.

   C. "BOUNDARY SURVEY & LOT DIVISION 752 OCEAN AVENUE, PORTLAND, MAINE MADE FOR DONALD ANSPACH, 752 OCEAN AVENUE, PORTLAND, MAINE" DATED MAY 25, 2004 AND REVISED THROUGH JUNE 18, 2008 BY TITCOMB ASSOCIATES, JOB NO. 87114.1.

   D. "STANDARD BOUNDARY SURVEY PLAN OF PROPERTY OCEAN AVENUE, PORTLAND, MAINE MADE FOR THE FINCH GROUP, 160 FEDERAL STREET, BOSTON, MA." DATED JULY 30, 1992 BY TITCOMB ASSOCIATES, JOB NO. 87114M.

   E. "OCEAN AVENUE STORM DRAIN AND SANITARY SEWER EXTENSION OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR OCEAN RIDGE REALTY, LLC, 91 OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED APRIL 3, 2001 AND REVISED THROUGH DECEMBER 3, 2002 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180, SHEETS 15 & 16 OF 18 SHEETS.

   F. "OCEAN AVENUE RECONSTRUCTION PHASE 3 AND PHASE 4, PLAN AND PROFILE STA. 122+00 TO STA. 127+50" DATED AUGUST 31, 2007 BY CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS ENGINEERING SECTION, PROJECT NO. C04517, SHEETS 6 & 7 OF 23 SHEETS

   G. "AMENDED SUBDIVISION PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED MARCH 6, 2001 AND REVISED THROUGH MARCH 13, 2003 BY SEBAGO TECHNICS, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 203, PAGE 264 AND SUPERCEDES A PLAN RECORDED IN PLAN BOOK 202, PAGE 725.
7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83. ELEVATIONS DEPICTED HEREON WERE OBSERVED IN NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS. ELEVATIONS HAVE BEEN CONVERTED TO NGVD29 UTILIZING THE U.S.ARMY CORPS OF ENGINEERS CORPSCON 6.0.1 SOFTWARE. THE CONVERSION IN THIS VICINITY IS 0.70 FEET HIGHER THAN NAVD88. ELEVATIONS ARE TIED TO THE CITY OF PORTLAND, MAINE VERTICAL DATUM.
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 THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051 0007 C, HAVING AN EFFECTIVE DATE OF DECEMBER 8, 1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS AN UNSHADED ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOODPLAIN.
10. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN NOVEMBER 2001 AND REVIEWED IN APRIL 2014 BY GARY M. FULLERTON, CERTIFIED SOIL SCIENTIST OF SEBAGO TECHNICS, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. WETLAND FLAGS WITHIN THE PROPOSED DEVELOPMENT AREAS WERE LOCATED BY GROUND SURVEY. WETLAND FLAGS OUTSIDE OF THE PROPOSED DEVELOPMENT AREA WERE LOCATED USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY. ALL GPS LOCATED POINTS HAVE A VARYING DEGREE OF ACCURACY AND MAY NOT REPRESENT THE ACTUAL FIELD LOCATION.
11. WITH REFERENCE TO ITEM 18 OF THE ALTA TABLE A, THE AREA ADJOINING THE NORTHERLY AND WESTERLY SIDELINES OF LAND OF CAIAZZO IS CLUTTERED WITH CONSTRUCTION AND RESIDENTIAL DEBRIS, TWO OLD VEHICLES AND ASSORTED HOUSEHOLD LITTER.

    THE AREA IN THE VICINITY OF THE USGS CONTROL DISKS IS ALSO BEING USED AS A DUMP SITE FOR LAWN DEBRIS BY THE ADJOINING CONDOMINIUM PROJECT.
12. EXISTING FOOTPATHS/TRAILS ARE AS DEPICTED HEREON, THEY ARE TYPICALLY ±2 FEET WIDE.



Plan 4

DESIGNED	CHECKED
PDO	RAM

REV:	BY:	DATE:
B	RAM	11-20-15
A	RAM	9-18-15

STATUS: RESPONSE TO CITY COMMENTS
PLAN SUBMISSION TO CITY OF PORTLAND

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 tel: 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 tel: 207-795-3535

OVERALL SITE PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

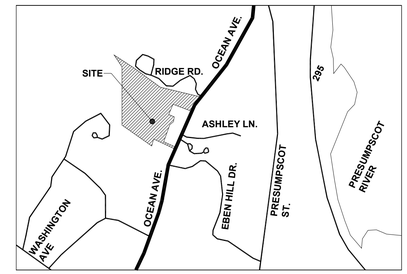
PROJECT NO.	SCALE
14432	1" = 60'

SHEET 4 OF 14

144325.dwg, TAB: S

Portland Vicinity Map

SCALE: N.T.S.



PROJECT STATISTICS:

PROJECT AREA:

TOTAL AREA 18.33 ACRES NET	798,363 SQ. FT.	
TOTAL BUILDING COVERAGE:	45,884 SQ FT	5.7%

AREA CALCULATIONS:

RETIREMENT BUILDING:	41,496 SQ. FT.	5.2%
GARAGES:	4,324 SQ. FT.	0.5%
ACCESSORY BUILDINGS:	64 SQ. FT.	0.1%
DRIVES:	59,828 SQ. FT.	7.5%
WALKS AND PATIOS:	21,148 SQ.F.T	2.6%
LANDSCAPED OPENSPACE:	671,503 SQ. FT.	84.1%

PERVIOUS / IMPERVIOUS AREA

IMPERVIOUS AREA: 15.9% PERVIOUS AREA: 84.1%

PARKING:

RETIREMENT PROJECT:
- 79 OPEN SPACES
- 18 COVERED SPACES
- 5 ACCESSIBLE SPACES
- 102 TOTAL SPACES

SITE PLAN

DATE: 19 Nov. 2015
SCALE: 1" = 30'-0"

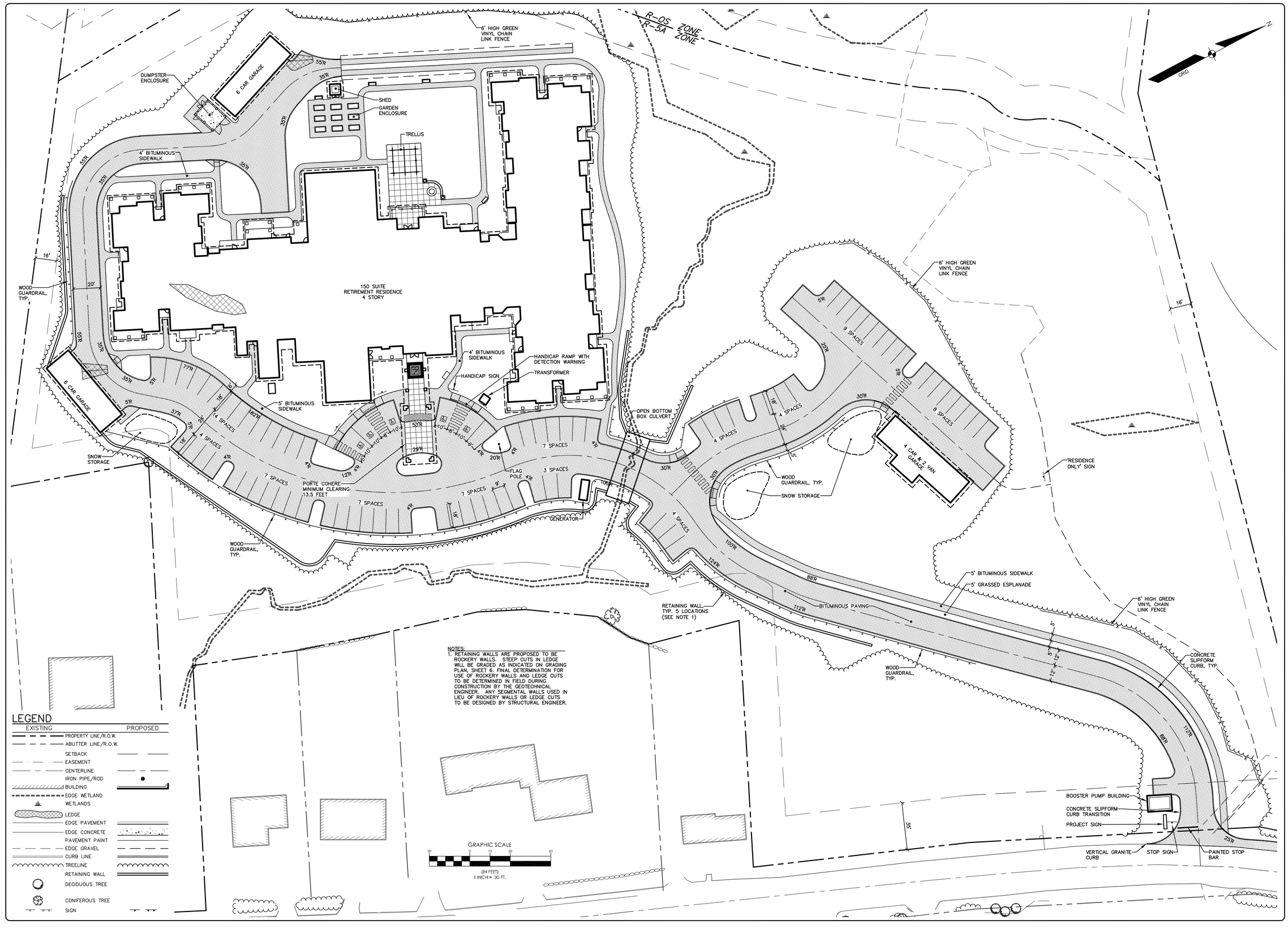
0 15 30 60 90

Portland Retirement Residence

Portland, Maine

lenity architecture
3150 Kettle Court SE, Salem, Oregon 97301
P 503 399 1090 F 503 399 0565 W lenityarchitecture.com

HAWTHORN RETIREMENT GROUP
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540



NOTES:
1. RETAINING WALLS ARE PROPOSED TO BE ROCKERY WALLS. STEEP CUTS IN LEDGE WILL BE GRADED AS INDICATED ON GRADING PLAN, SHEET 6. FINAL DETERMINATION FOR USE OF ROCKERY WALLS AND LEDGE CUTS TO BE DETERMINED IN FIELD DURING CONSTRUCTION BY THE GEOTECHNICAL ENGINEER. ANY SEGMENTAL WALLS USED IN LIEU OF ROCKERY WALLS OR LEDGE CUTS TO BE DESIGNED BY STRUCTURAL ENGINEER.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
	SETBACK
EASEMENT	
CENTERLINE	
IRON PIPE/ROD	
BUILDING	
EDGE WETLAND	
WETLANDS	
LEDGE	
EDGE PAVEMENT	
EDGE CONCRETE	
	PAVEMENT PAINT
EDGE GRAVEL	
CURB LINE	
TREELINE	
	RETAINING WALL
DECIDUOUS TREE	
CONIFEROUS TREE	
SIGN	

11-20-15

Plan 5b

DESIGNED	CHECKED
PDO	RAM

REV:	BY:	DATE:	STATUS
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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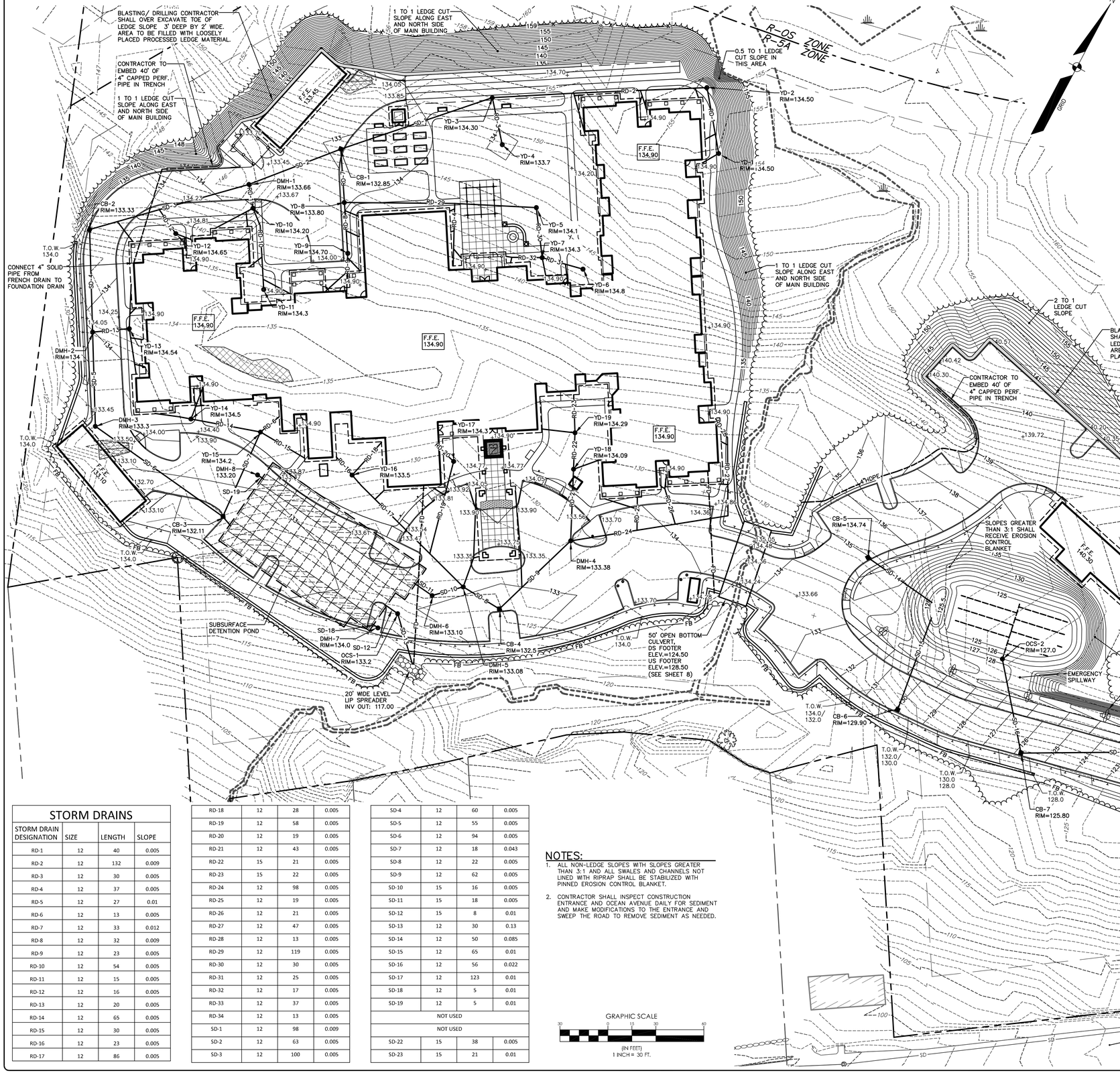
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-795-3535

SITE PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 30'

SHEET 5 OF 14

144325.dwg, TAB:S1



STRUCTURES

NUMBER	RIM ELEVATION	INVERT IN	INVERT OUT
CB-1	132.85	129.22	129.22
CB-2	133.33	128.41	128.41
CB-3	132.00	126.89	126.89
CB-4	132.50	128.90	128.90
CB-5	134.74	-	130.25
CB-6	129.90	-	126.20
CB-7	125.80	121.60	121.50
CB-8	111.25	-	106.90
CB-9	111.13	106.71	106.61
DMH-1	133.66	128.91	128.91
DMH-2	134.00	128.11	128.11
DMH-3	133.30	127.36	127.36
DMH-4	133.38	129.19	129.19
DMH-5	133.08	128.79	128.79
DMH-6	133.10	128.71	128.71
DMH-7	134.00	-	15.50
DMH-8	133.20	-	125.50
YD-1	134.50	131.50	131.50
YD-2	134.50	131.30	131.30
YD-3	134.30	130.05	130.05
YD-4	133.70	-	130.20
YD-5	134.10	130.12	130.12
YD-6	134.80	130.40	130.40
YD-7	134.30	130.27	130.27
YD-8	133.80	129.60	129.60
YD-9	134.70	129.90	129.90
YD-10	134.20	128.98	128.98
YD-11	134.30	-	129.25
YD-12	134.65	128.71	128.71
YD-13	134.54	128.21	128.21
YD-14	134.50	130.90	130.90
YD-15	134.20	130.60	129.05
YD-16	133.50	129.46	129.46
YD-17	134.30	129.51	129.51
YD-18	134.09	129.41	129.41
YD-19	134.29	129.51	129.51

STORM DRAINS

STORM DRAIN DESIGNATION	SIZE	LENGTH	SLOPE
RD-1	12	40	0.005
RD-2	12	132	0.009
RD-3	12	30	0.005
RD-4	12	37	0.005
RD-5	12	27	0.01
RD-6	12	13	0.005
RD-7	12	33	0.012
RD-8	12	32	0.009
RD-9	12	23	0.005
RD-10	12	54	0.005
RD-11	12	15	0.005
RD-12	12	16	0.005
RD-13	12	20	0.005
RD-14	12	65	0.005
RD-15	12	30	0.005
RD-16	12	23	0.005
RD-17	12	86	0.005
RD-18	12	28	0.005
RD-19	12	58	0.005
RD-20	12	19	0.005
RD-21	12	43	0.005
RD-22	15	21	0.005
RD-23	15	22	0.005
RD-24	12	98	0.005
RD-25	12	19	0.005
RD-26	12	21	0.005
RD-27	12	47	0.005
RD-28	12	13	0.005
RD-29	12	119	0.005
RD-30	12	30	0.005
RD-31	12	25	0.005
RD-32	12	17	0.005
RD-33	12	37	0.005
RD-34	12	13	0.005
SD-1	12	98	0.009
SD-2	12	63	0.005
SD-3	12	100	0.005
SD-4	12	60	0.005
SD-5	12	55	0.005
SD-6	12	94	0.005
SD-7	12	18	0.043
SD-8	12	22	0.005
SD-9	12	62	0.005
SD-10	15	16	0.005
SD-11	15	18	0.005
SD-12	15	8	0.01
SD-13	12	30	0.13
SD-14	12	50	0.085
SD-15	12	65	0.01
SD-16	12	56	0.022
SD-17	12	123	0.01
SD-18	12	5	0.01
SD-19	12	5	0.01
NOT USED			
NOT USED			
SD-22	15	38	0.005
SD-23	15	21	0.01

NOTES:

1. ALL NON-LEDGE SLOPES WITH SLOPES GREATER THAN 3:1 AND ALL SWALES AND CHANNELS NOT LINED WITH RIPRAP SHALL BE STABILIZED WITH PINNED EROSION CONTROL BLANKET.
2. CONTRACTOR SHALL INSPECT CONSTRUCTION ENTRANCE AND OCEAN AVENUE DAILY FOR SEDIMENT AND MAKE MODIFICATIONS TO THE ENTRANCE AND SWEEP THE ROAD TO REMOVE SEDIMENT AS NEEDED.

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 INCH = 30 FT.

11-20-15

Plan 6

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME. 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B 04240 Lewiston, ME Tel: 207-753-5656

GRADING AND DRAINAGE PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 30'

SHEET 6 OF 14

14432GD.dwg, TAB: 6

Plan 7

PORTLAND RETIREMENT RESIDENCE

802 OCEAN AVENUE
PORTLAND, ME

APPLICANT:

HAWTHORN RETIREMENT GROUP
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

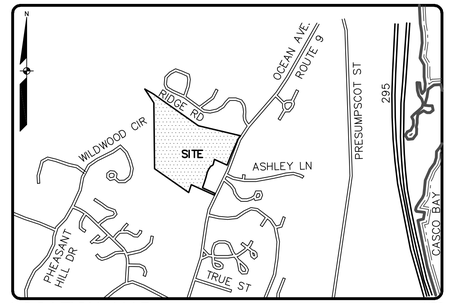
ENGINEER/SURVEYOR:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel. 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel. 207-783-5656

ARCHITECT/AGENT

lenity architecture
3150 Kettle Court SE, Salem, Oregon 97301
p 503 399 1090 f 503 399 0565 w lenityarchitecture.com

SCALE: 1" = 60'



LOCATION MAP NTS

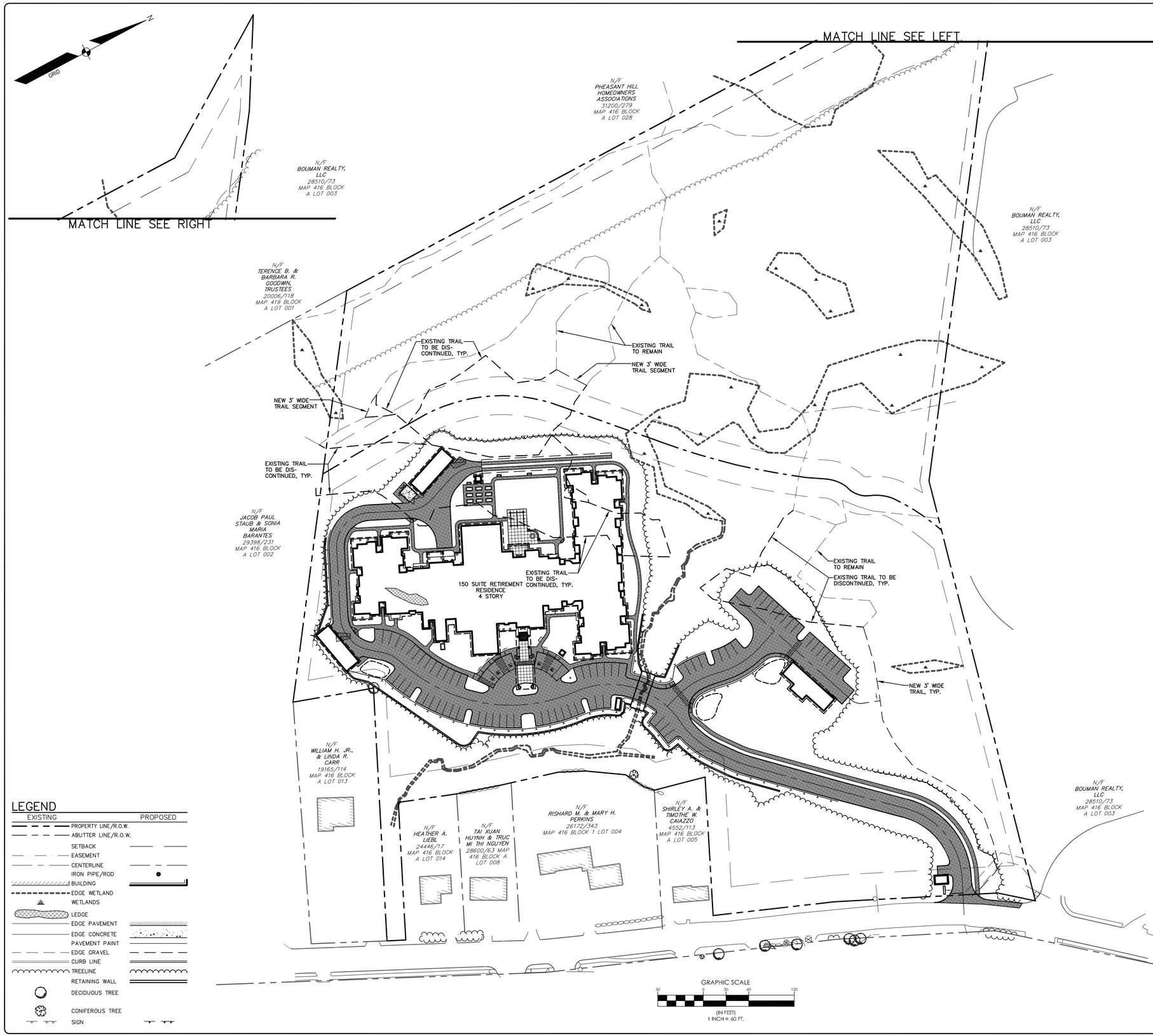
SHEET INDEX

SHEET	TITLE
1	COVER SHEET
2	ALTA-ACSM LAND TITLE SURVEY
3	ALTA-ACSM LAND TITLE SURVEY
4	OVERALL SITE PLAN
5	SITE PLAN
6	GRADING PLAN
7	UTILITY PLAN
8	BOX CULVERT PLAN AND SECTION
9	DETAILS
10	DETAILS
11	DETAILS
12	DETAILS
13	STORMTECH STORMWATER DETAILS
14	OCEAN AVENUE SIDEWALK PLAN

1 OF 1 PRE DEVELOPMENT WATERSHED PLAN
2 OF 2 POST DEVELOPMENT WATERSHED PLAN

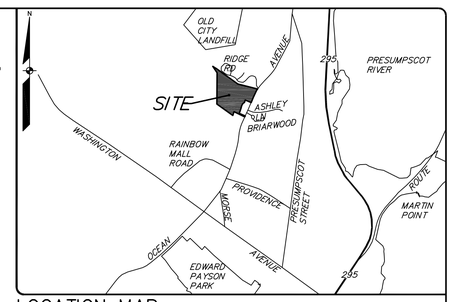
REVISED THROUGH 11-20-15

14432C.dwg, TAB:C



LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
SETBACK	
EASEMENT	
CENTERLINE	
IRON PIPE/ROD	
BUILDING	
EDGE WETLAND	
WETLANDS	
LEDGE	
EDGE PAVEMENT	
EDGE CONCRETE	
PAVEMENT PAINT	
EDGE GRAVEL	
CURB LINE	
TREELINE	
RETAINING WALL	
DECIDUOUS TREE	
CONIFEROUS TREE	
SIGN	



LOCATION MAP

N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS GRAVES HILL LAND COMPANY, LLC BY DEED DATED JULY 1, 2004 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 21500, PAGE 269.
2. THE PROPERTY IS SHOWN AS LOTS A006, A007 AND A021 ON TAX MAP 416 AND LOT A007 ON TAX MAP 411 OF THE CITY OF PORTLAND TAX MAPS AND IS LOCATED IN THE BOTH THE R-5A RESIDENTIAL ZONE AND R-OS RECREATION AND OPEN SPACE ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE R5A AND ROS DISTRICTS ARE AS FOLLOWS:

	R5A	ROS
LOCUS AREA WITHIN ZONING DISTRICT:	10.171 ACRES	8.157 ACRES
MINIMUM LOT SIZE:	1,600 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONTAGE:	50 FEET	N/A
MAXIMUM LOT COVERAGE:	30%	25%
MINIMUM LOT WIDTH:	60 FEET	N/A
MINIMUM RECREATION OPEN SPACE:	200 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONT YARD:	35 FEET	25 FEET
MINIMUM SIDE YARD:	16 FEET	12 FEET
MINIMUM REAR YARD:	25 FEET	25 FEET
MAXIMUM BUILDING HEIGHT:	55 FEET	N/A

- SEE BUILDING LENGTH GREATER THAN 100'.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 798,387.448 SQUARE FEET OR 18.328 ACRES.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN DECEMBER 2014 AND JANUARY 2015.
6. PLAN REFERENCES:

   A. "PLAN SHOWING A BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY MADE FOR DIANE DOYLE, (MAILING ADDRESS: 16 TIFFANY LANE, SACO, ME 04072) PARCEL LOCATED AT OCEAN AVENUE, PORTLAND, MAINE" DATED JULY 8, 2002 AND REVISED THROUGH FEBRUARY 11, 2005 BY DOW & COULOMBE, INC. SHEETS 1 & 2 OF 2. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 204, PAGE 293 & PAGE 294.

   B. "ASBUILT SURVEY PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED NOVEMBER 29, 2005 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180.

   C. "BOUNDARY SURVEY & LOT DIVISION 752 OCEAN AVENUE, PORTLAND, MAINE MADE FOR DONALD ANSPACH, 752 OCEAN AVENUE, PORTLAND, MAINE" DATED MAY 25, 2004 AND REVISED THROUGH JUNE 18, 2008 BY TITCOMB ASSOCIATES, JOB NO. 87114.1.

   D. "STANDARD BOUNDARY SURVEY PLAN OF PROPERTY OCEAN AVENUE, PORTLAND, MAINE MADE FOR THE FINCH GROUP, 160 FEDERAL STREET, BOSTON, MA." DATED JULY 30, 1992 BY TITCOMB ASSOCIATES, JOB NO. 87114M.

   E. "OCEAN AVENUE STORM DRAIN AND SANITARY SEWER EXTENSION OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR OCEAN RIDGE REALTY, LLC, 91 OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED APRIL 3, 2001 AND REVISED THROUGH DECEMBER 3, 2002 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180, SHEETS 15 & 16 OF 18 SHEETS.

   F. "OCEAN AVENUE RECONSTRUCTION PHASE 3 AND PHASE 4, PLAN AND PROFILE STA. 122+00 TO STA. 127+50" DATED AUGUST 31, 2007 BY CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS ENGINEERING SECTION, PROJECT NO. C04517, SHEETS 6 & 7 OF 23 SHEETS

   G. "AMENDED SUBDIVISION PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED MARCH 6, 2001 AND REVISED THROUGH MARCH 13, 2003 BY SEBAGO TECHNICS, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 203, PAGE 264 AND SUPERCEDES A PLAN RECORDED IN PLAN BOOK 202, PAGE 725.

7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83. ELEVATIONS DEPICTED HEREON WERE OBSERVED IN NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS. ELEVATIONS HAVE BEEN CONVERTED TO NGVD29 UTILIZING THE U.S.ARMY CORPS OF ENGINEERS CORPSCON 6.0.1 SOFTWARE. THE CONVERSION IN THIS VICINITY IS 0.70 FEET HIGHER THAN NAVD88. ELEVATIONS ARE TIED TO THE CITY OF PORTLAND, MAINE VERTICAL DATUM.
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 THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051 0007 C, HAVING AN EFFECTIVE DATE OF DECEMBER 8, 1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS AN UNSHADED ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOODPLAIN.
10. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN NOVEMBER 2001 AND REVIEWED IN APRIL 2014 BY GARY M. FULLERTON, CERTIFIED SOIL SCIENTIST OF SEBAGO TECHNICS, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. WETLAND FLAGS WITHIN THE PROPOSED DEVELOPMENT AREAS WERE LOCATED BY GROUND SURVEY. WETLAND FLAGS OUTSIDE OF THE PROPOSED DEVELOPMENT AREA WERE LOCATED USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY. ALL GPS LOCATED POINTS HAVE A VARYING DEGREE OF ACCURACY AND MAY NOT REPRESENT THE ACTUAL FIELD LOCATION.
11. WITH REFERENCE TO ITEM 18 OF THE ALTA TABLE A, THE AREA ADJOINING THE NORTHERLY AND WESTERLY SIDELINES OF LAND OF CAIAZZO IS CLUTTERED WITH CONSTRUCTION AND RESIDENTIAL DEBRIS, TWO OLD VEHICLES AND ASSORTED HOUSEHOLD LITTER.

    THE AREA IN THE VICINITY OF THE USGS CONTROL DISKS IS ALSO BEING USED AS A DUMP SITE FOR LAWN DEBRIS BY THE ADJOINING CONDOMINIUM PROJECT.
12. EXISTING FOOTPATHS/TRAILS ARE AS DEPICTED HEREON, THEY ARE TYPICALLY ±2 FEET WIDE.



DESIGNED	CHECKED
PDO	RAM

REV:	BY:	DATE:
B	RAM	11-20-15
A	RAM	9-18-15

STATUS: RESPONSE TO CITY COMMENTS
PLAN SUBMISSION TO CITY OF PORTLAND

THIS PLANS SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, ADDITIONS OR DELETIONS TO THIS PLAN SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

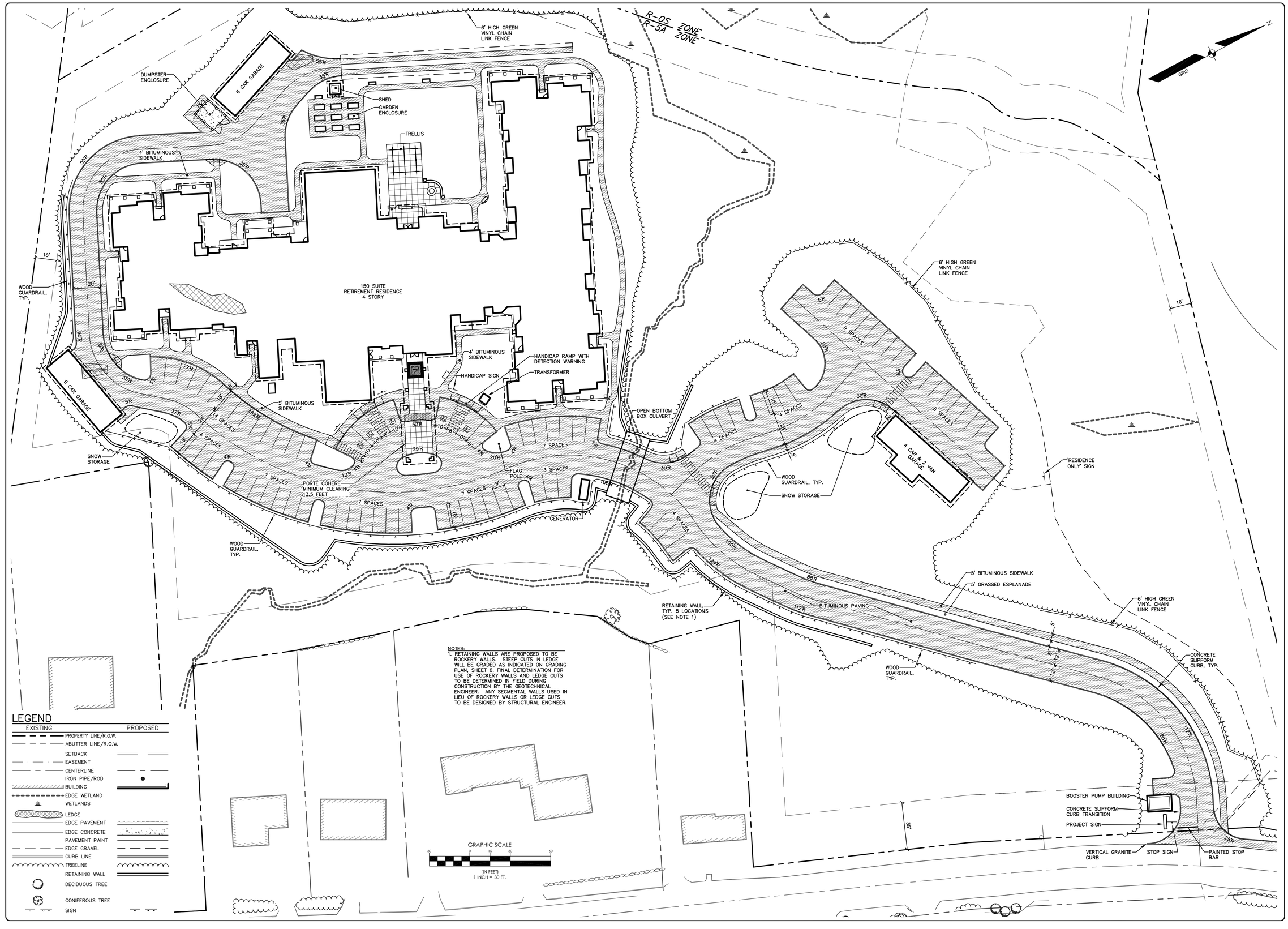
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WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-795-3535

OVERALL SITE PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 60'

SHEET 4 OF 14

144325.dwg, TAB: S



NOTES:
1. RETAINING WALLS ARE PROPOSED TO BE ROCKERY WALLS. STEEP CUTS IN LEDGE WILL BE GRADED AS INDICATED ON GRADING PLAN, SHEET 6. FINAL DETERMINATION FOR USE OF ROCKERY WALLS AND LEDGE CUTS TO BE DETERMINED IN FIELD DURING CONSTRUCTION BY THE GEOTECHNICAL ENGINEER. ANY SEGMENTAL WALLS USED IN LIEU OF ROCKERY WALLS OR LEDGE CUTS TO BE DESIGNED BY STRUCTURAL ENGINEER.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
	SETBACK
EASEMENT	
CENTERLINE	
IRON PIPE/ROD	
BUILDING	
EDGE WETLAND	
WETLANDS	
LEDGE	
EDGE PAVEMENT	
EDGE CONCRETE	
	PAVEMENT PAINT
EDGE GRAVEL	
CURB LINE	
TREELINE	
	RETAINING WALL
DECIDUOUS TREE	
CONIFEROUS TREE	
SIGN	

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 INCH = 30 FT.

11-20-15

DESIGNED	CHECKED
PDO	RAM

REV:	BY:	DATE:	STATUS
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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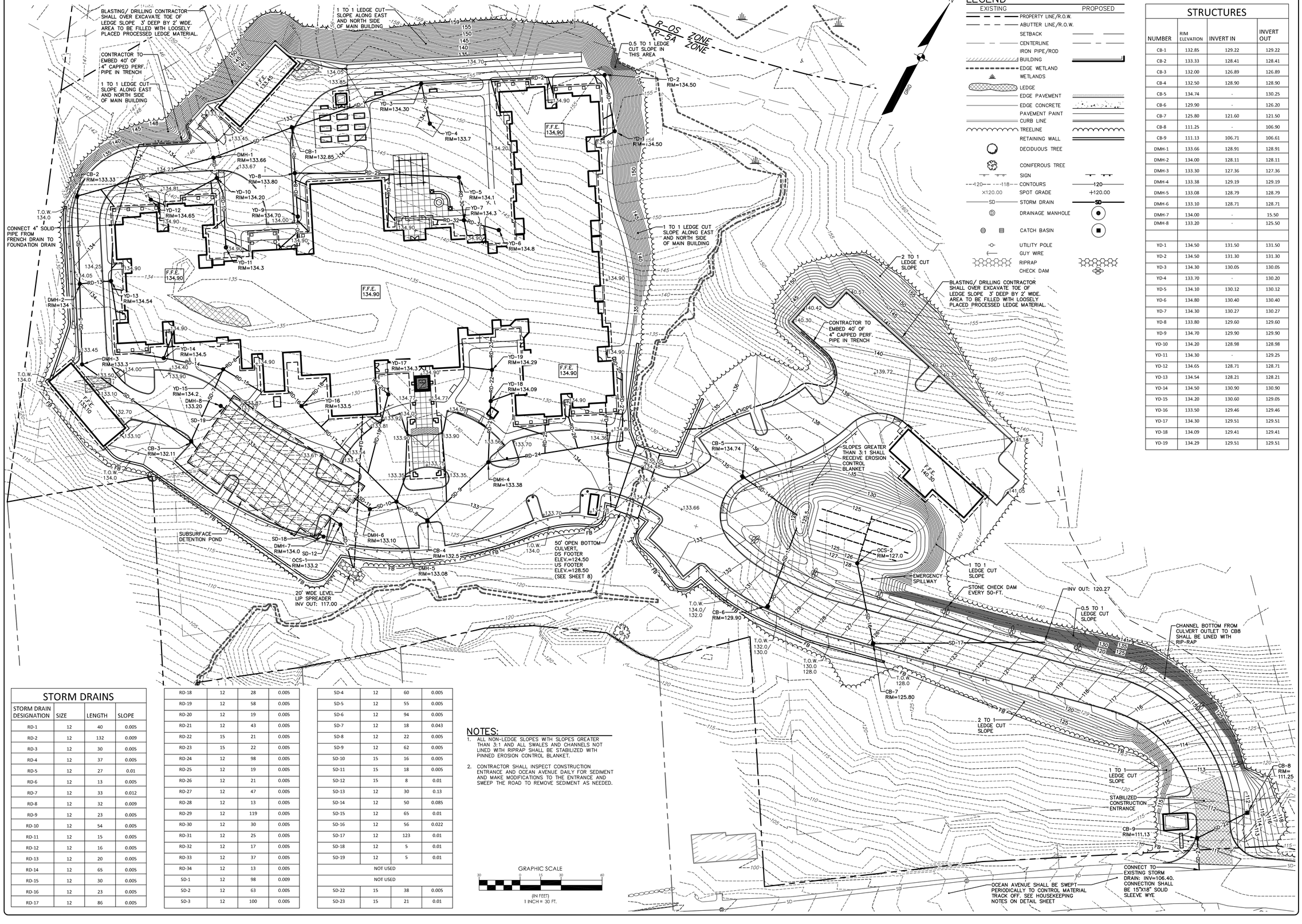
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250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-795-3535

SITE PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 30'

SHEET 5 OF 14

144325.dwg, TAB:S1



STRUCTURES

NUMBER	RIM ELEVATION	INVERT IN	INVERT OUT
CB-1	132.85	129.22	129.22
CB-2	133.33	128.41	128.41
CB-3	132.00	126.89	126.89
CB-4	132.50	128.90	128.90
CB-5	134.74	-	130.25
CB-6	129.90	-	126.20
CB-7	125.80	121.60	121.50
CB-8	111.25	-	106.90
CB-9	111.13	106.71	106.61
DMH-1	133.66	128.91	128.91
DMH-2	134.00	128.11	128.11
DMH-3	133.30	127.36	127.36
DMH-4	133.38	129.19	129.19
DMH-5	133.08	128.79	128.79
DMH-6	133.10	128.71	128.71
DMH-7	134.00	-	15.50
DMH-8	133.20	-	125.50
YD-1	134.50	131.50	131.50
YD-2	134.50	131.30	131.30
YD-3	134.30	130.05	130.05
YD-4	133.70	-	130.20
YD-5	134.10	130.12	130.12
YD-6	134.80	130.40	130.40
YD-7	134.30	130.27	130.27
YD-8	133.80	129.60	129.60
YD-9	134.70	129.90	129.90
YD-10	134.20	128.98	128.98
YD-11	134.30	-	129.25
YD-12	134.65	128.71	128.71
YD-13	134.54	128.21	128.21
YD-14	134.50	130.90	130.90
YD-15	134.20	130.60	129.05
YD-16	133.50	129.46	129.46
YD-17	134.30	129.51	129.51
YD-18	134.09	129.41	129.41
YD-19	134.29	129.51	129.51

STORM DRAINS

STORM DRAIN DESIGNATION	SIZE	LENGTH	SLOPE
RD-1	12	40	0.005
RD-2	12	132	0.009
RD-3	12	30	0.005
RD-4	12	37	0.005
RD-5	12	27	0.01
RD-6	12	13	0.005
RD-7	12	33	0.012
RD-8	12	32	0.009
RD-9	12	23	0.005
RD-10	12	54	0.005
RD-11	12	15	0.005
RD-12	12	16	0.005
RD-13	12	20	0.005
RD-14	12	65	0.005
RD-15	12	30	0.005
RD-16	12	23	0.005
RD-17	12	86	0.005
RD-18	12	28	0.005
RD-19	12	58	0.005
RD-20	12	19	0.005
RD-21	12	43	0.005
RD-22	15	21	0.005
RD-23	15	22	0.005
RD-24	12	98	0.005
RD-25	12	19	0.005
RD-26	12	21	0.005
RD-27	12	47	0.005
RD-28	12	13	0.005
RD-29	12	119	0.005
RD-30	12	30	0.005
RD-31	12	25	0.005
RD-32	12	17	0.005
RD-33	12	37	0.005
RD-34	12	13	0.005
SD-1	12	98	0.009
SD-2	12	63	0.005
SD-3	12	100	0.005
SD-4	12	60	0.005
SD-5	12	55	0.005
SD-6	12	94	0.005
SD-7	12	18	0.043
SD-8	12	22	0.005
SD-9	12	62	0.005
SD-10	15	16	0.005
SD-11	15	18	0.005
SD-12	15	8	0.01
SD-13	12	30	0.13
SD-14	12	50	0.085
SD-15	12	65	0.01
SD-16	12	56	0.022
SD-17	12	123	0.01
SD-18	12	5	0.01
SD-19	12	5	0.01
NOT USED			
NOT USED			
SD-22	15	38	0.005
SD-23	15	21	0.01

NOTES:

1. ALL NON-LEDGE SLOPES WITH SLOPES GREATER THAN 3:1 AND ALL SWALES AND CHANNELS NOT LINED WITH RIPRAP SHALL BE STABILIZED WITH PINNED EROSION CONTROL BLANKET.
2. CONTRACTOR SHALL INSPECT CONSTRUCTION ENTRANCE AND OCEAN AVENUE DAILY FOR SEDIMENT AND MAKE MODIFICATIONS TO THE ENTRANCE AND SWEEP THE ROAD TO REMOVE SEDIMENT AS NEEDED.

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 INCH = 30 FT.

11-20-15

DESIGNED	CHECKED
PDO	RAM

REV:	BY:	DATE:	STATUS
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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250 Goddard Rd. Suite B 04240 Lewiston, ME Tel: 207-753-5656

GRADING AND DRAINAGE PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 30'

SHEET 6 OF 14

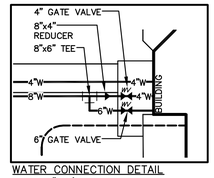
14432GD.dwg, TAB: G

SANITARY PIPE DATA

SEWER PIPE	SIZE	LENGTH	SLOPE
S-1	8	60	0.08
S-2	8	54	0.05
S-3	8	260	0.042
S-4	8	58	0.005
S-5	8	46	0.005
S-6	8	98	0.005
S-7	6	47	0.01
S-8	6	114	0.01
S-9	6	84	0.01
S-10	6	36	0.01
S-11	6	22	0.01

SANITARY STRUCTURE DATA

SEWER STRCUTURE	RIM	INVERT IN	INVERT OUT
SMH 1	112.89	106.15	106.05
SMH 2	115.42	108.90	108.80
SMH 3	128.50	119.79	119.69
SMH 4	131.64	120.18	120.08
SMH 5	113.36	120.51	120.41
SMH 6	133.93	127.68(BLDG)	121.00
		127.25(SMH 7)	
SMH 7	133.15	128.49	128.39
SMH 8	133.90	129.43 (2)	129.33
SMH 9	133.75	129.75	129.65



WATER CONNECTION DETAIL
SCALE: 1"=10'

NOTES:
1. RELOCATE GUY POLE AND CONSTRUCT GUY WIRE FOR PROPOSED ELECTRIC/ TELECOM/CABLE SERVICE.
2. THE WORK FOR CONSTRUCTION OF THE CHANNEL AND RECONNECTION OF THE EXISTING CHANNEL BENCH WITHIN THE MANHOLE SHALL BE DONE TO THE SATISFACTION OF THE WASTEWATER MAINTENANCE DEPARTMENT. THE WORK SHALL BE COORDINATED THROUGH THE ENGINEER AND JOHN EMERSON, CITY OF PORTLAND WASTEWATER DEPARTMENT (207-318-0239). CONTRACTOR WILL BE RESPONSIBLE FOR BYPASS PUMPING OF UPSTREAM FLOWS DURING THE MANHOLE WORK.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
SETBACK	
EASEMENT	
CENTERLINE	
IRON PIPE/ROD	
BUILDING	
EDGE WETLAND	
WETLANDS	
LEDGE	
EDGE PAVEMENT	
EDGE CONCRETE	
PAVEMENT PAINT	
CURB LINE	
TREELINE	
RETAINING WALL	
DECIDUOUS TREE	
CONIFEROUS TREE	
SIGN	
WATER	W
S SANITARY SEWER	S
Ⓢ SANITARY MANHOLE	
SD STORM DRAIN	SD
Ⓓ DRAINAGE MANHOLE	
OHU OVERHEAD UTILITY	
UTILITY POLE	
GUY WIRE	

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 INCH = 30 FT.

11-20-15

DESIGNED	CHECKED
PDO	RAM

REV.	BY	DATE	STATUS
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-753-9825

UTILITY PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 30'

SHEET 7 OF 14

14432GU.dwg, TAB: U

EROSION CONTROL MEASURES:

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED 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. THE PLACEMENT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

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

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION . AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD . OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN 14-DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100' OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

   ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 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.

2. 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.

3. NATURAL RESOURCES PROTECTION:

   ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) WITHIN 7 DAYS 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.

4. SEDIMENT BARRIERS:

   PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

   SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

   HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH AND ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

   EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

   CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

5. TEMPORARY CHECK DAMS:

   SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

   STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

   HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

   MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

6. STORMDRAIN INLET PROTECTION:

   INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLETOR 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.

7. STABILIZED CONSTRUCTION ENTRANCE/EXIT:

   PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

8. 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.

9. TEMPORARY VEGETATION:

   TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

10. PERMANENT VEGETATION:

    REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

    SEEDBED PREPARATION:

    A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

    B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

    C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

    APPLICATION OF SEED:

    A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS:

       MDOT SEEDING METHOD NO.1- PARK MIXTURE
       MDOT SEEDING METHOD NO.3- ROADSIDE MIXTURE NO.3

       NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

    B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

    C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STAGGERED LIKE BRICK AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% (10H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF WOOD WASTE COMPOST AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.

B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

C. STABILIZE THE SLOPE WITH WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE SLOPE. THE APPLICANT WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.

B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN SPRING/SUMMER 2016 DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED FOR THE CONSTRUCTION OF THE SITE IMPROVEMENTS.

SCHEDULE

1.	ESTIMATED CONSTRUCTION TIME:	16 MONTHS
*2.	EROSION CONTROL MEASURES PLACED.	WEEK 1 - WEEK 15
3.	SITE CLEARING AND GRUBBING.	WEEK 2 - WEEK 8
4.	BUILDING CONSTRUCTION	WEEK 8 - WEEK 72
5.	CONSTRUCTION OF PARKING SUBBASE FOR ACCESS.	WEEK 4 - WEEK 12
6.	STORMWATER MANAGEMENT AREA CONSTRUCTION.	WEEK 6 - WEEK 12
7.	UTILITY IMPROVEMENTS	WEEK 8 - WEEK 12
8.	PARKING BASE AND BINDER PAVEMENT	WEEK 12 - WEEK 14
9.	STABILIZE FOR WINTER	OCTOBER 31 OF CONSTRUCTION YEAR
10.	LANDSCAPING AND SEEDING	WEEK 66 - 67
11.	CONSTRUCTION OF FINISH PAVEMENT	WEEK 68
12.	FINAL SEEDING ON PREPARED AREAS. (DURING GROWING SEASON.)	WEEK 64 - WEEK 68
13.	BIWEEKLY MONITORING OF VEGETATIVE GROWTH.	WEEK 41 - WEEK 72
**	14. RE-SEEDING OF AREAS, IF NEEDED.	WEEK 52 - WEEK 72
**	15. REMOVAL OF EROSION CONTROL DEVICES.	UPON FINAL PROJECT COMPLETION AND STABILIZATION

** DATES ARE SUBJECT TO CHANGE AT THE DISCRETION OF THE ENGINEER, DEPENDING ON CONSTRUCTION PROGRESS.

INSPECTIONS/MONITORING:

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, OR AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS AS NEEDED TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 85%-90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

HOUSEKEEPING:

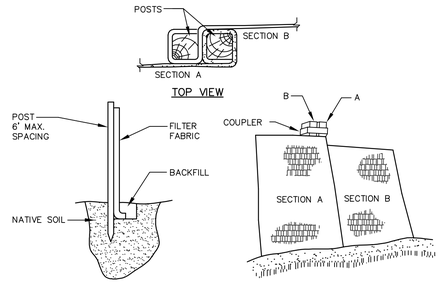
A. SPILL PREVENTION: CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON-SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.

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. OCEAN AVENUE SHALL BE ROUTINELY MONITORED AND PERIODICALLY SWEPT TO CONTROL TRACKING OF DUST/DEBRIS. WATER SHALL BE THE ONLY APPLIED DUST CONTROL METHOD UTILIZED ON PAVED SURFACES.

D. DEBRIS AND OTHER MATERIALS: LITTER, CONSTRUCTION DEBRIS, AND CHEMICALS EXPOSED TO STORMWATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

E. TRENCH DEWATERING: TRENCH DEWATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFERDAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES, THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER MUST BE REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, AND MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED.



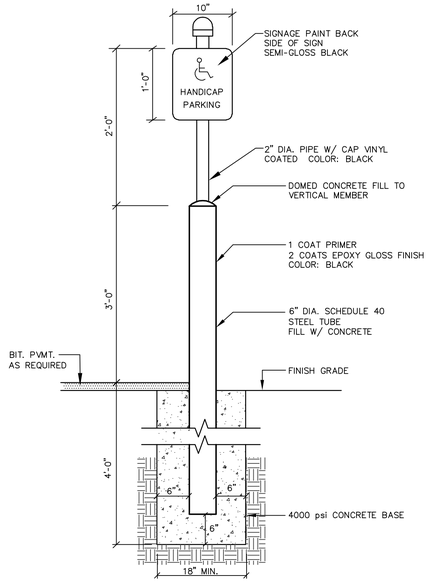
INSTALLATION:

1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

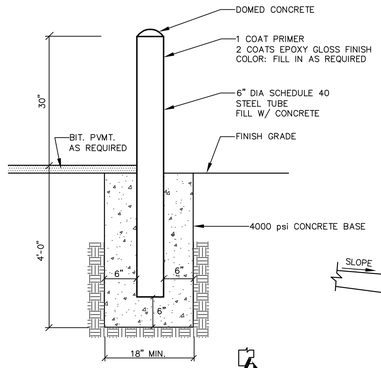
FILTER BARRIER
NOT TO SCALE

WINTER EROSION CONTROL MEASURES:

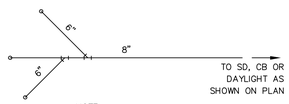
THE WINTER CONSTRUCTION PERIOD IS FROM OCTOBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP



1 HANDICAP SIGNS IN METAL BOLLARD
NOT TO SCALE

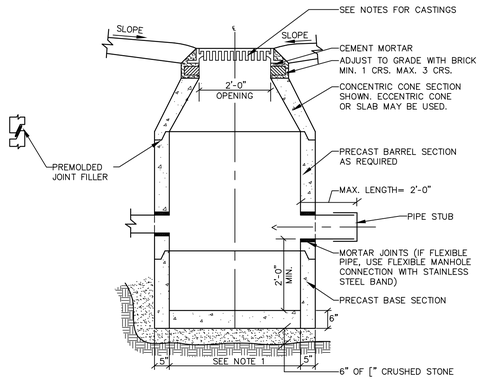


4 METAL BOLLARD
NOT TO SCALE



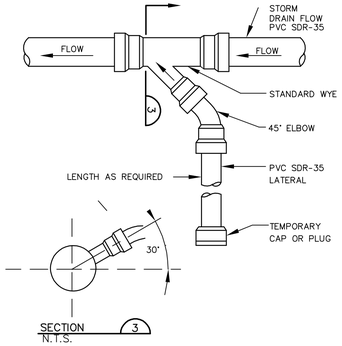
NOTE:
ROOF DRAIN LOCATIONS MAY CHANGE. SEE ARCHITECTURAL PLANS FOR FINAL LOCATIONS.

5 TYPICAL ROOF DRAIN
NOT TO SCALE

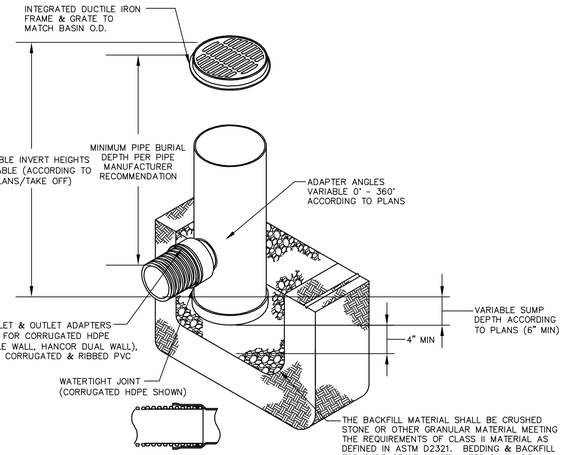


NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE EAST JORDAN FOUNDRY 5250 OR APPROVED EQUAL.
5. DRAINAGE MANHOLE FRAME AND COVER TO BE EAST JORDAN FOUNDRY 1122, TYPE A, OR APPROVED EQUAL. COVER SHALL BE MARKED "DRAIN".

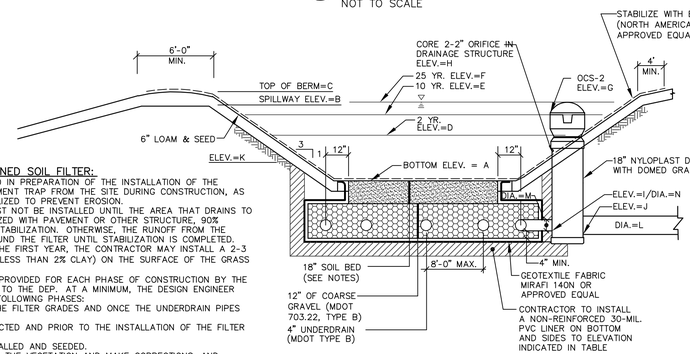
6 TYPICAL CONCRETE DRAINAGE STRUCTURE
NOT TO SCALE



8 ROOF DRAIN SERVICE CONNECTION
NOT TO SCALE



10 NYLOPLAST DRAIN BASIN
NOT TO SCALE



CONSTRUCTION NOTES FOR UNDERDRAINED SOIL FILTER:
1. THE AREA OF THE BASIN MAY BE EXCAVATED IN PREPARATION OF THE INSTALLATION OF THE UNDERDRAIN AND CAN BE USED FOR A SEDIMENT TRAP FROM THE SITE DURING CONSTRUCTION, AS LONG AS THE BASIN IS MULCHED AND STABILIZED TO PREVENT EROSION.
2. THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION. OTHERWISE, THE RUNOFF FROM THE CONTRIBUTING AREA MUST BE DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
3. IF VEGETATION IS NOT ESTABLISHED WITHIN THE FIRST YEAR, THE CONTRACTOR MAY INSTALL A 2-3 INCH LAYER OF SANDY LOAM TOPSOIL (WITH LESS THAN 2% CLAY) ON THE SURFACE OF THE GRASS FILTER AND RESEED/MULCH.
4. INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, THE DESIGN ENGINEER SHALL INSPECT THE CONSTRUCTION AT THE FOLLOWING PHASES:
   A. AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
   B. AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
   C. AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
   D. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS, AND
   E. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN SHALL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.
5. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF THE FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL
   A. SUBMIT SAMPLES OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE GRABS FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
   B. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES, 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED BY HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
   C. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.

UNDERDRAINED FILTER NOTES:
1. THE SOIL BED SHALL CONSIST OF A SILTY SAND SOIL OR SOIL MIXTURE COMBINED WITH 20% TO 25% BY VOLUME OF A MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH. THE RESULTING MIXTURE MUST HAVE NO LESS THAN 8% PASSING THE 200 SIEVE AND SHALL HAVE A CLAY CONTENT OF LESS THAN 2%. THE SAND USED IN THE MIXTURE SHALL MEET THE FOLLOWING SPECIFICATIONS:
   SIEVE 3/8" - 100 PERCENT PASSING
   SIEVE #4 - 95-100 PERCENT PASSING
   SIEVE #8 - 80-100 PERCENT PASSING
   SIEVE #16 - 50-85 PERCENT PASSING
   SIEVE #30 - 25-60 PERCENT PASSING
   SIEVE #60 - 10-30 PERCENT PASSING
   SIEVE #100 - 2-10 PERCENT PASSING
   SIEVE #200 - 0-5 PERCENT PASSING
2. COMPACTION OF THE SOIL BED MATERIAL SHALL BE AVOIDED. IF COMPACTION OCCURS, ROTOTILL AGAIN PRIOR TO SEEDING OR SODDING.

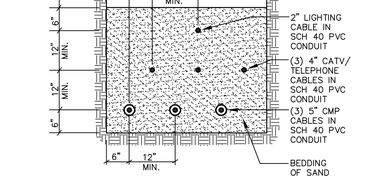
EMBANKMENT CONSTRUCTION NOTES:
1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATIONS
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

POND DIMENSIONS													
UNDERDRAIN GRASS FILTER	ELEVATION IN FEET										DIA (IN)		
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
USF-1	125.00	127.5	128.0	126.30	126.99	127.17	127.00	126.00	122.83	122.83	126.0	12	4	0.9

SOIL BORING SUMMARY TABLE					
BORING NO.	EXIST. GRADE (FT.)	EXIST. SHWT DEPTH (IN.)	ELEV. (FT.)	PROPOSED BMP STRUCTURE	UNDERDRAIN INVERT ELEV. (FT.)
1	VARIES	VARIES	VARIES	UNDERDRAINED FILTER POND-USF-1	122.83

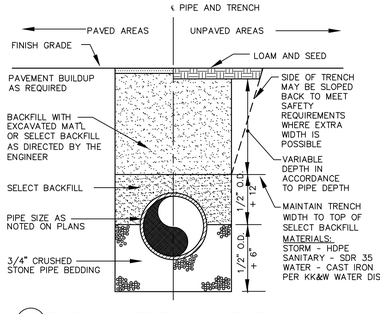
ENTIRE SITE IS OVERLAID BY LEDGE. SOIL REPORTS INDICATE THAT GROUNDWATER MAY BE WITHIN A COUPLE FEET OF SURFACE BASED UPON ARTESIAN CONDITIONS.

11 UNDERDRAINED SOIL FILTER BASIN
NOT TO SCALE



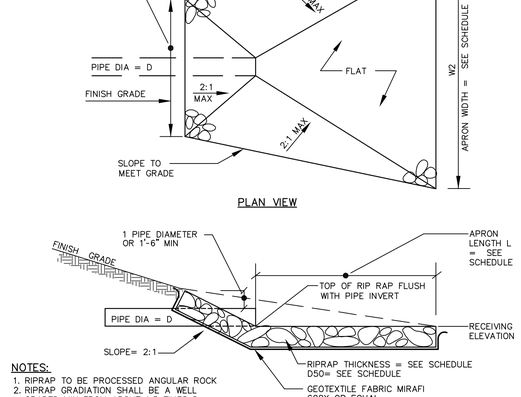
CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT WHEN RUN BENEATH PAVED AREAS.

2 TYPICAL UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



MATERIALS:
STORM - HDPE
SANITARY - SDR 35
WATER - CAST IRON
PER KK&W WATER DISTRICT

3 TYPICAL TRENCH SECTION
NOT TO SCALE



PLAN VIEW

SECTION VIEW

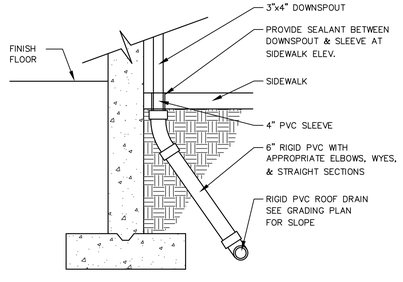
NOTES:
1. RIPRAP TO BE PROCESSED ANGULAR ROCK
2. RIPRAP GRADIATION SHALL BE A WELL GRADED MIX FROM ABOUT 1.5 TIMES D SIZE TO 25 PERCENT OF THE D SIZE
3. THE RIPRAP STONES SHALL BE CAREFULLY PLACED FROM THE TOE OF THE SLOPE UPWARD
4. STONES SHALL BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12" ONTO THE GEOTEXTILE
5. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH, UNIFORMLY SLOPED SURFACE

SIZING NOTES:
1. VALUES CALCULATED USING AN HDPE CULVERT AT A SLOPE OF 1% FLOWING FULL.
2. APRON LENGTHS AND RIPRAP D50 SIZES DETERMINED FROM THE OUTLET PROTECTION SIZING CHART IN THE MARCH 2003 MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL.
3. APRON WIDTHS W1 & W2 WERE BASED ON THE STANDARDS SET FORTH IN THE MARCH 2003 MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL SECTION E-3-2.
4. THESE DIMENSIONS ARE MINIMUM VALUES FOR EACH PIPE. IF NECESSARY, THESE DIMENSIONS CAN BE INCREASED AND ARE LABELED BY THE ENGINEER ON THE PLANS.

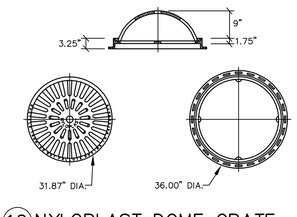
TYPICAL RIPRAP APRON SCHEDULE

CULVERT DIAMETER - D (IN.)	APRON LENGTH - L (FT.)	WIDTH -W1 (FT)	WIDTH -W2 (FT)	RIPRAP D50 (IN.)	RIPRAP THICKNESS (IN.)
12	8	3	9	6	14
15	10	4	12	6	14
18	13	5	15	7	16
24	18	6	20	8	18
36	29	9	32	11	25
42	33	11	37	12	27
48	39	12	43	16	36

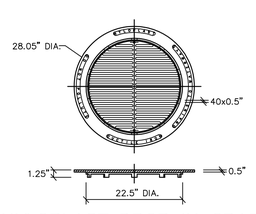
7 RIPRAP APRON
NOT TO SCALE



9 ROOF DRAIN CONNECTOR
NOT TO SCALE



12 NYLOPLAST DOME GRATE
NYLOPLAST #3099CGD NOT TO SCALE
USE AT ALL UNDERDRAINED PONDS



13 NYLOPLAST DROP IN GRATE
NYLOPLAST #2401DI NOT TO SCALE
USE AT ALL FIELD INLETS

11-20-15

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS:
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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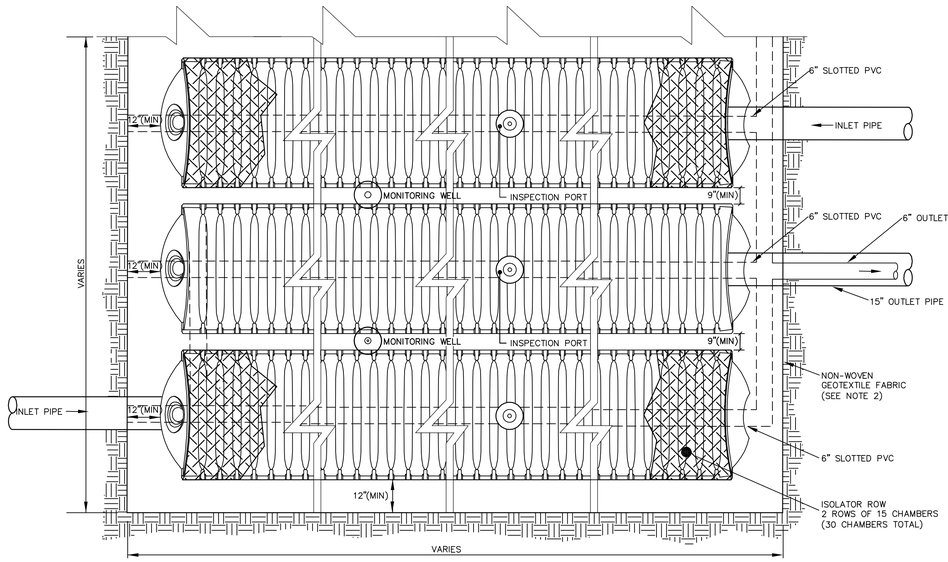
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250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-795-3535

DETAILS
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	NTS

SHEET 11 OF 14

144320.dwg, TAB:D3



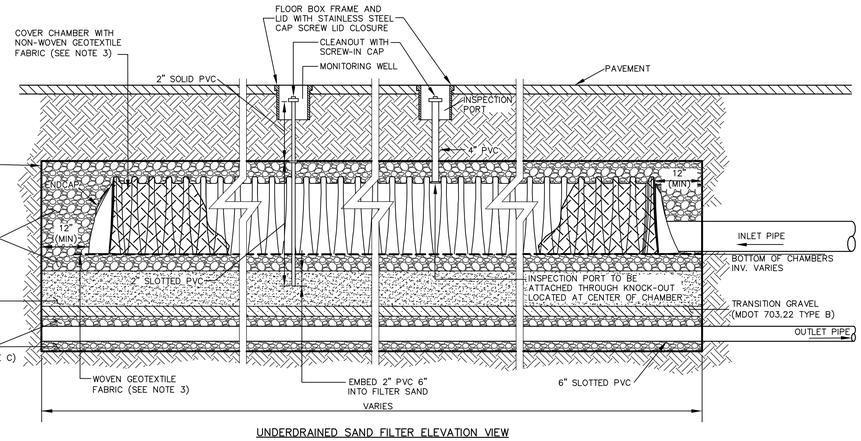
UNDERDRAINED SAND FILTER PLAN VIEW

SUBSURFACE UNDERDRAINED SAND FILTER NOTES:

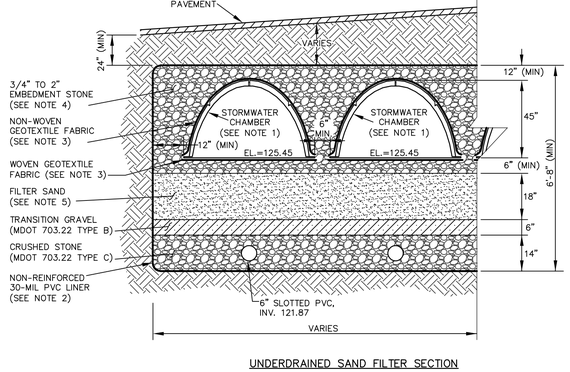
1. THE STORMWATER CHAMBER SHALL BE A STORMTECH MC-3500 OR EQUIVALENT SUBSURFACE STORAGE CHAMBER APPROVED BY THE ENGINEER.
2. THE ENTIRE SUBSURFACE SYSTEM, INCLUDING THE CRUSHED STONE STORAGE VOLUME, THE FILTER MEDIA, AND UNDERDRAIN MATERIALS, SHALL BE WRAPPED IN A NON-REINFORCED 30-MIL PVC LINER
3. A STRIP OF WOVEN GEOTEXTILE THAT MEETS AASHTO M288 CLASS ONE REQUIREMENTS (MIRAFI FW404 OR EQUIVALENT) MUST BE PLACED BETWEEN THE BOTTOM OF THE CHAMBER AND ITS STONE FOUNDATION. THIS FABRIC TRAPS SEDIMENTS AND PROTECTS THE UNDERLYING CRUSHED STONE. A SECOND STRIP OF NON-WOVEN AASHTO M288 CLASS 2 GEOTEXTILE (MIRAFI 160N OR EQUIVALENT) SHALL BE DRAPED OVER THE ENTIRE LENGTH OF THE CHAMBERS. THIS FABRIC WILL ALSO TRAP SEDIMENTS AND PROVIDE SEPARATION BETWEEN THE CHAMBERS AND SURROUNDING STONE.
4. THE EMBEDMENT STONE SURROUNDING THE CHAMBERS SHALL BE A WASHED, ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN 3/4 INCH AND 2 INCH. THE BOTTOM 6 INCH LAYER OF STONE THAT ACTS AS THE FOUNDATION BELOW THE CHAMBERS SHALL BE COMPACTED TO ACHIEVE A 95% STANDARD PROCTOR DENSITY.
5. THE SAND FILTER MATERIAL SHALL BE A UNIFORM MIX, FREE OF STONES LARGER THAN 2 INCHES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS. THE MATERIAL SHALL MEET THE SPECIFICATIONS FOR MDOT AGGREGATE SAND (MDOT #703.01). HOWEVER, THIS AGGREGATE SAND SHALL BE MIXED WITH LOAM TO ACHIEVE A MATERIAL WITH BETWEEN 8% AND 10% PASSING THE #200 SIEVE. THE LOAM USED IN THIS MIXTURE SHALL HAVE A MINIMAL CLAY CONTENT. THIS 18 INCH LAYER OF SAND FILTRATION MEDIA SHALL BE PLACED TO ACHIEVE A LEVEL OF COMPACTION BETWEEN 92% AND 95% STANDARD PROCTOR DENSITY.

CONSTRUCTION OVERSIGHT NOTES FOR SUBSURFACE SAND FILER:

1. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE CHAMBERS AND ITS FILTER COURSE MATERIAL TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBGRADE, FILTER BED MATERIAL PLACEMENT, INSTALLATION OF STONE, ISOLATOR ROW AND CHAMBER, SURROUNDING STONE, FABRIC LAYMENT AND STORMWATER OVERFLOW BYPASS CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO FINAL PAVER PLACEMENT.

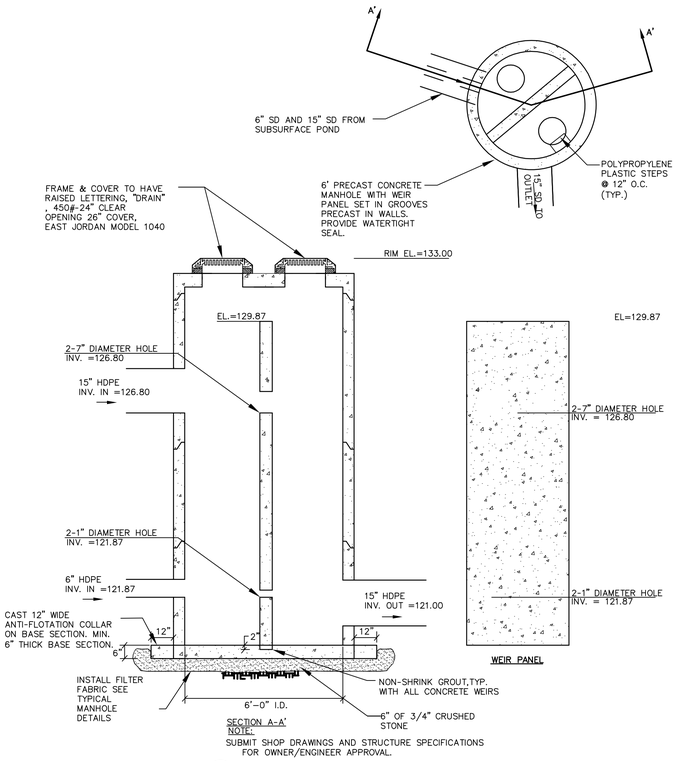


UNDERDRAINED SAND FILTER ELEVATION VIEW



UNDERDRAINED SAND FILTER SECTION

1 SUBSURFACE UNDERDRAINED SAND FILTER
NOT TO SCALE



SECTION A-A'

NOTE:
SUBMIT SHOP DRAWINGS AND STRUCTURE SPECIFICATIONS FOR OWNER/ENGINEER APPROVAL.

2 OUTLET CONTROL STRUCTURE (OCS-1)
NOT TO SCALE

HOUSEKEEPING:

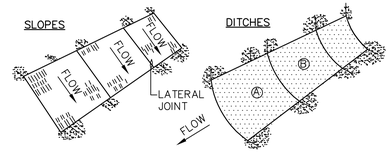
A. SPILL PREVENTION: CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON-SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.

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 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.



NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET
NOT TO SCALE

11-20-15

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS:
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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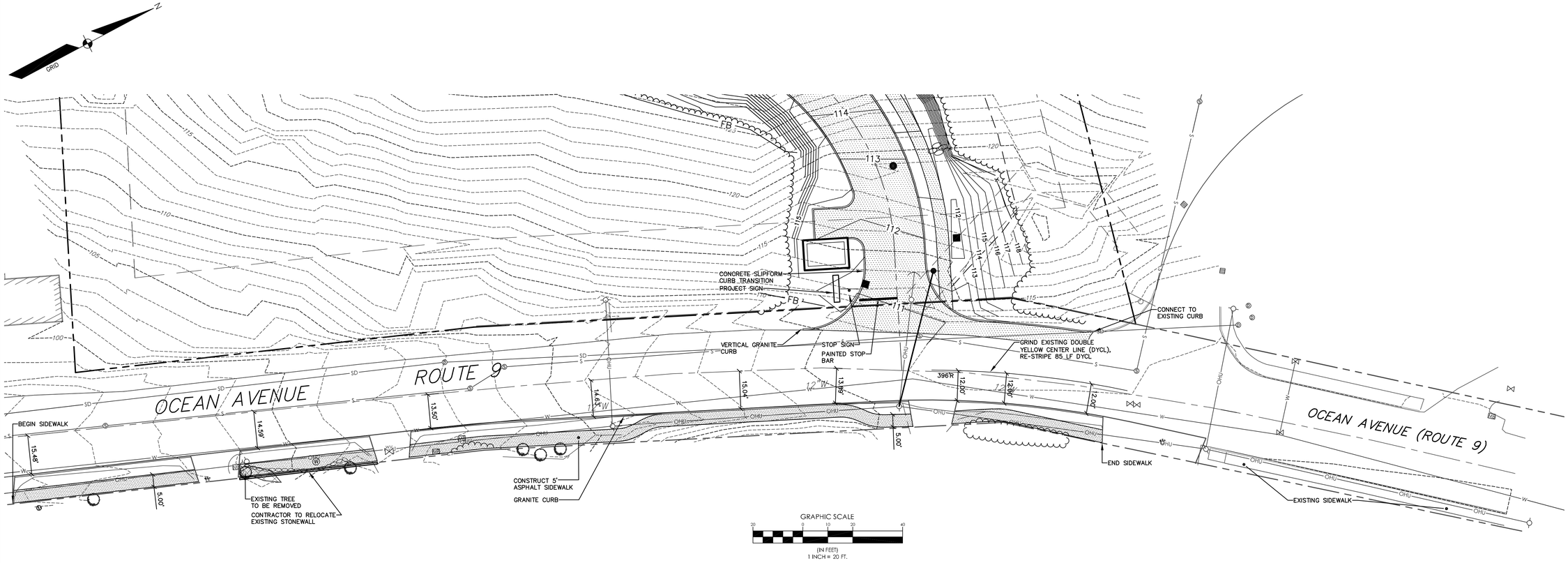
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75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-755-2698

STORMTECH STORMWATER DETAILS
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	NTS

SHEET 13 OF 14

14432D.dwg, TAB:D5



GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

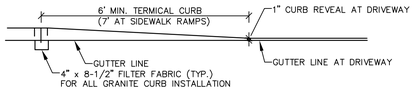
NOTES:
1. EXISTING MONUMENTATION SHALL BE PROTECTED AND REMAIN UNDISTURBED DURING CONSTRUCTION. ANY ALTERATION TO MONUMENTATION AS NECESSARY TO ACCOMMODATE CONSTRUCTION SHALL BE COORDINATED WITH CITY OF PORTLAND ENGINEERING DIVISION AND IN CONFORMANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS.

2. WHERE LEDGE REMOVAL IS NECESSARY TO ACCOMMODATE SIDEWALK CONSTRUCTION, LEDGE SHALL BE REMOVED SUCH THAT A MINIMUM CLEARANCE OF 2-FEET IS PROVIDED AT THE BACK EDGE OF SIDEWALK, AS MEASURED ALONG THE SIDEWALK SURFACE.

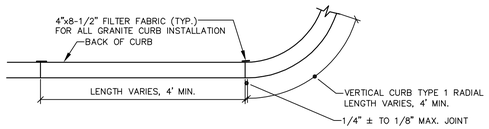
3. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION.

LEGEND

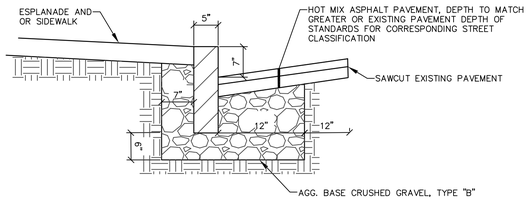
EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
SETBACK	
CENTERLINE	
IRON PIPE/ROD	
BUILDING	
EDGE PAVEMENT	
CURB LINE	
RETAINING WALL	
DECIDUOUS TREE	
SIGN	
W WATER	
WATER GATE VALVE	
WATER SHUT OFF	
HYDRANT	
WATER MANHOLE	
S SANITARY SEWER	
SANITARY MANHOLE	
SD STORM DRAIN	
DRAINAGE MANHOLE	
CATCH BASIN	
OHU OVERHEAD UTILITY	
UTILITY POLE	



TERMINAL CURB PROFILE

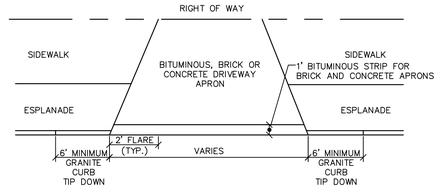


VERTICAL GRANITE CURB PLAN VIEW

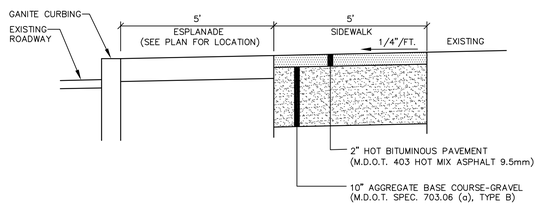


VERTICAL GRANITE CURB CROSS SECTION

VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREETS
NOT TO SCALE



DRIVEWAY APRON LAYOUT
NOT TO SCALE



BITUMINOUS SIDEWALK
NOT TO SCALE

11-20-15

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS
C	RAM	11-20-15	RESPONSE TO CITY COMMENTS
B	RAM	10-30-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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South Portland, ME 04106
Tel: 207-200-2100
250 Goddard Rd. Suite B
Lewiston, ME 04240
Tel: 207-795-3585

OCEAN AVENUE SIDEWALK PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 20'

SHEET 14 OF 14

14432OCEAN SIDEWALK.dwg, TAB:OCEAN AVE SIDEWALK



LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (B, C)
- REACH
- WATERSHED LABEL (1)
- REACH (1)
- DETENTION POND (1)
- SOILS BOUNDARY

11-20-15

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS:
B.	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A.	RAM	9-17-15	PLAN SUBMISSION TO CITY OF PORTLAND

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75 John Roberts Rd. Suite 1A, South Portland, ME 04106 Tel: 207-200-2100

250 Goddard Rd. Suite B, Lewiston, ME 04240 Tel: 207-753-9258

PRE DEVELOPMENT WATERSHED PLAN

OF:

PORTLAND RETIREMENT RESIDENCE

802 OCEAN AVENUE
PORTLAND, ME

FOR:

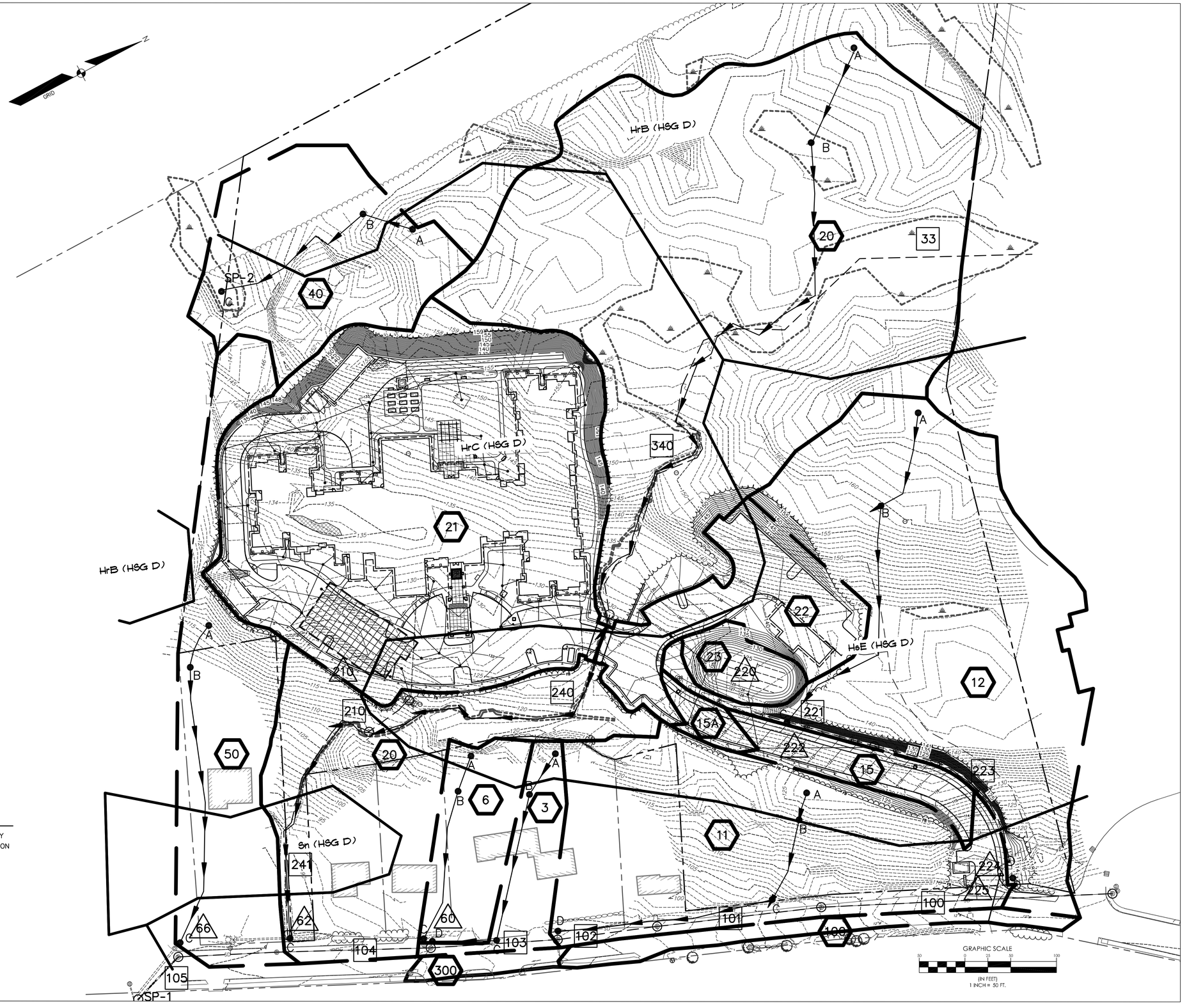
HAWTHORN RETIREMENT GROUP

9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 50'

SHEET 1 OF 2

14432SMP.dwg, TAB:PRE



LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (B, C)
- REACH
- 1 — WATERSHED LABEL
- 1 — REACH
- 1 — DETENTION POND
- SOILS BOUNDARY

11-20-15

DESIGNED	CHECKED
PDO	RAM

REV.:	BY:	DATE:	STATUS:
B.	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A.	RAM	9-17-15	PLAN SUBMISSION TO CITY OF PORTLAND

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250 Goddard Rd. Suite B Lewiston, ME. 04240 Tel: 207-783-3656

POST DEVELOPMENT WATERSHED PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN RETIREMENT GROUP
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 50'

SHEET 2 OF 2

14432SMP.dwg, TAB:POST

GENERAL STRUCTURAL NOTES

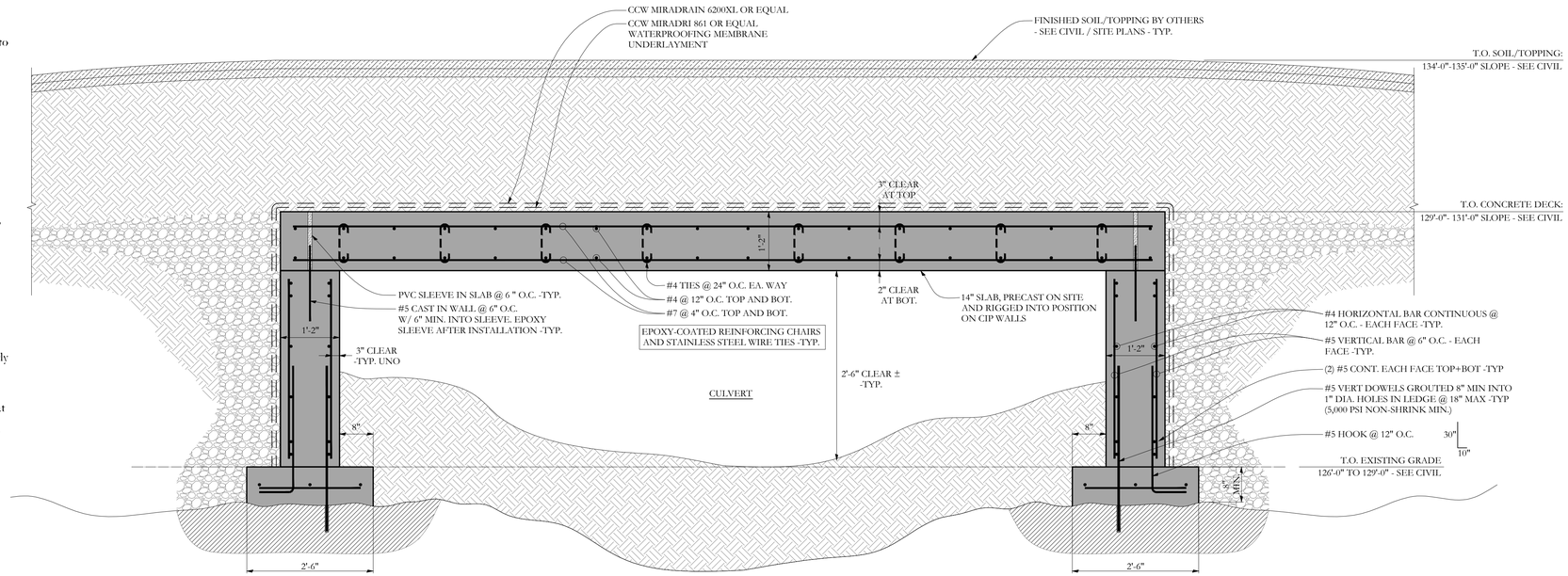
SI Job # 15-0169
Portland Retirement Residence
Box Culvert Design
Portland, ME

DESIGN LIVE LOADS: MUBEC, ACI 318 and AASHTO/HY-25
* Vehicle/Traffic TA400 (56,438 #/ Axle)

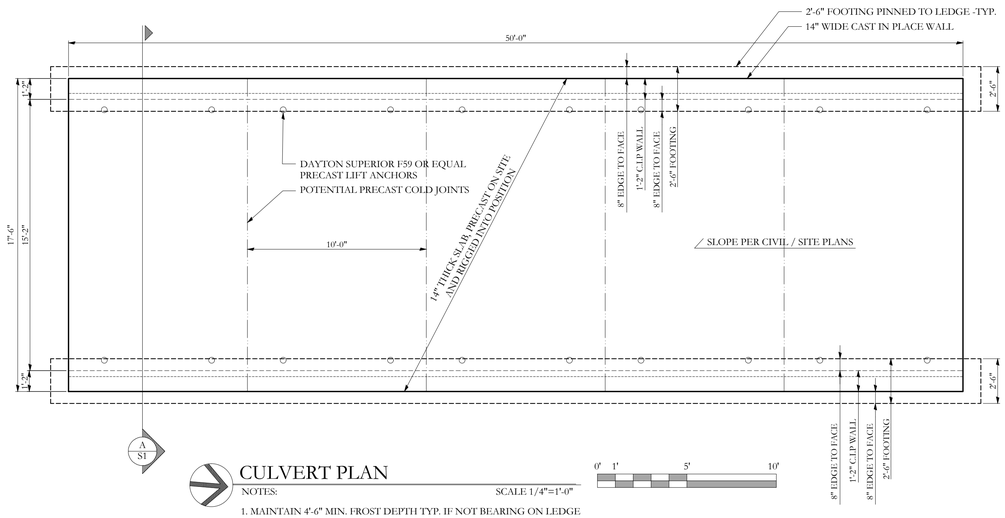
FOUNDATION:
* Based on geotechineal report No. 14-1188 S by S.W. Cole, dated January 16, 2015. See report for earthwork requirements. Soils engineer shall verify soil conditions and types during excavation and prior to concrete placement.
* Footings shall bear on ledge, or otherwise be placed on undisturbed natural soil or compacted fill tested and approved by soils engineer where ledge bearing is not possible.
* Maximum design soil pressure: 4,000 psf on crushed stone on firm virgin soil.

CONCRETE AND REINFORCEMENT:
* Concrete shall conform to applicable provisions of ACI-301 and 318.
  Minimum 28 day compressive strength (f'c)
  Footings, slab, and walls: 5,000 psi w/ 6% air entrainment, max w/c ratio = .42
* Cement Type: I/II
* Deformed reinforcement: ASTM A615 grade 60, except bars specified to be field-bent, stirrups, and ties which shall be grade 40.
* Reinforcement shall be fabricated and placed per ACI Manual of Standard Practice (ACI-315). At splices, lap bars 50 diameters unless noted otherwise.
* Concrete cover over reinforcing: 1½" for concrete placed against forms; 3" for concrete placed against earth. See also drawings.
* Keep reinforcement clean and free of dirt, oil, and scale. Oil forms prior to placing reinforcement.
* All reinforcing steel to be epoxy coated
* All reinforcing steel **crossing cold joints** shall be stainless steel [when required by DOT].
* Repair damaged epoxy coated bars with approved repair coating.
* Grout: 2500 psi at 28 days. Vibrate to consolidate.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS
* The structural drawings illustrate the completed structure with all elements in their final positions, properly supported and braced. The contractor, in the proper sequence, shall provide proper shoring and bracing as may be required to achieve the final completed structure.
* These plans have been engineered for construction at one specific building site. Builder assumes ALL responsibility for use of these plans at Any Other building site. Plans shall not be used for construction at any other building site without specific review by the engineer.
* Observations of foundation reinforcing as required by the owner, lender, insurer, building department or any other party will be accomplished by the engineer at the owner's expense. At least 24 hours advance notice is requested.



SECTION A/S1 3/4"=1'-0



CULVERT PLAN
NOTES: SCALE 1/4"=1'-0"

1. MAINTAIN 4'-6" MIN. FROST DEPTH TYP. IF NOT BEARING ON LEDGE

FOR PERMIT

STATE OF MAINE
AARON C. JONES
No. 10968
LICENSED PROFESSIONAL ENGINEER
8/25/15

Structural Integrity
Consulting Engineers, Inc.
77 Oak Street
Portland, ME, 04101
p. 207-774-4614
f. 866-793-7835
www.structuralintegy.com

BUILD WITH CONFIDENCE

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SI# 15-0169

Plan 8

DESIGNED	CHECKED
CDM	CLB

REV.	DATE	BY:
E	CDM 05-04-2015	ADDED FOOTPATHS/TRAILS & CORRESPONDING NOTE 12
D	CDM 02-26-2015	REVISED UTILITIES IN OCEAN AVENUE
C	CDM 01-23-2015	REVISED BORINGS/PROBES
B	CDM 01-23-2015	PLAN REVISED TO REFLECT TITLE COMMITMENT 14030909 REVISED 1-12-15
A	CDM 01-07-2015	ISSUED TO CLIENT FOR REVIEW

STATUS:

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250 Goddard Rd., Suite 8 Lewiston, ME 04240 Tel. 207-783-5656

BOX CULVERT PLAN AND SECTION
ON LAND OWNED BY:
GRAVES HILL LAND COMPANY, LLC
802-838 OCEAN AVENUE
PORTLAND, MAINE 04103
PREPARED FOR:
HAWTHORN DEVELOPMENT, LLC
9210 NE VANCOUVER MALL DRIVE, SUITE 200
VANCOUVER, WASHINGTON 98662-8210

PROJECT NO.	SCALE
14432	1" = 50'

SHEET 8 OF 14

15-0169.dwg, TAB: S1

EROSION CONTROL MEASURES:

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED 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. THE PLACEMENT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

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

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION . AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD . OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN 14-DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100' OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

   ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 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.

2. 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.

3. NATURAL RESOURCES PROTECTION:

   ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) WITHIN 7 DAYS 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.

4. SEDIMENT BARRIERS:

   PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

   SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

   HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH AND TIGHTLY ABUTTING ONE ANOTHER.

   EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

   CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

5. TEMPORARY CHECK DAMS:

   SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

   STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

   HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

   MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

6. STORMDRAIN INLET PROTECTION:

   INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLETOR 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.

7. STABILIZED CONSTRUCTION ENTRANCE/EXIT:

   PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

8. 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.

9. TEMPORARY VEGETATION:

   TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

10. PERMANENT VEGETATION:

    REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

    SEEDBED PREPARATION:

    A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

    B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

    C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

    APPLICATION OF SEED:

    A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS:

       MDOT SEEDING METHOD NO.1- PARK MIXTURE
       MDOT SEEDING METHOD NO.3- ROADSIDE MIXTURE NO.3

       NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

    B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

    C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STAGGERED LIKE BRICK AND TAMPED OR ROLLED TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% (10H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF WOOD WASTE COMPOST AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.

B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

C. STABILIZE THE SLOPE WITH WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE SLOPE. THE APPLICANT WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.

B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN SPRING/SUMMER 2016 DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED FOR THE CONSTRUCTION OF THE SITE IMPROVEMENTS.

SCHEDULE

1.	ESTIMATED CONSTRUCTION TIME:	16 MONTHS
*2.	EROSION CONTROL MEASURES PLACED.	WEEK 1 - WEEK 15
3.	SITE CLEARING AND GRUBBING.	WEEK 2 - WEEK 8
4.	BUILDING CONSTRUCTION	WEEK 8 - WEEK 72
5.	CONSTRUCTION OF PARKING SUBBASE FOR ACCESS.	WEEK 4 - WEEK 12
6.	STORMWATER MANAGEMENT AREA CONSTRUCTION.	WEEK 6 - WEEK 12
7.	UTILITY IMPROVEMENTS	WEEK 8 - WEEK 12
8.	PARKING BASE AND BINDER PAVEMENT	WEEK 12 - WEEK 14
9.	STABILIZE FOR WINTER	OCTOBER 31 OF CONSTRUCTION YEAR
10.	LANDSCAPING AND SEEDING	WEEK 66 - 67
11.	CONSTRUCTION OF FINISH PAVEMENT	WEEK 68
12.	FINAL SEEDING ON PREPARED AREAS. (DURING GROWING SEASON.)	WEEK 64 - WEEK 68
13.	BIWEEKLY MONITORING OF VEGETATIVE GROWTH.	WEEK 41 - WEEK 72
**	14. RE-SEEDING OF AREAS, IF NEEDED.	WEEK 52 - WEEK 72
**	15. REMOVAL OF EROSION CONTROL DEVICES.	UPON FINAL PROJECT COMPLETION AND STABILIZATION

** DATES ARE SUBJECT TO CHANGE AT THE DISCRETION OF THE ENGINEER, DEPENDING ON CONSTRUCTION PROGRESS.

INSPECTIONS/MONITORING:

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, OR AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS AS NEEDED TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 85%-90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

HOUSEKEEPING:

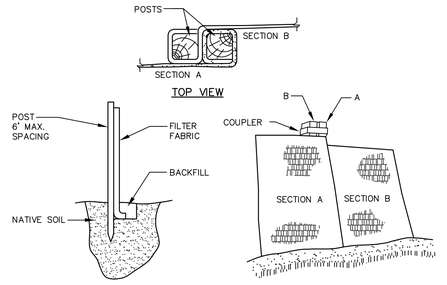
A. SPILL PREVENTION: CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON-SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.

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. OCEAN AVENUE SHALL BE ROUTINELY MONITORED AND PERIODICALLY SWEPT TO CONTROL TRACKING OF DUST/DEBRIS. WATER SHALL BE THE ONLY APPLIED DUST CONTROL METHOD UTILIZED ON PAVED SURFACES.

D. DEBRIS AND OTHER MATERIALS: LITTER, CONSTRUCTION DEBRIS, AND CHEMICALS EXPOSED TO STORMWATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

E. TRENCH DEWATERING: TRENCH DEWATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFERDAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES, THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER MUST BE REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, AND MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE A COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED.



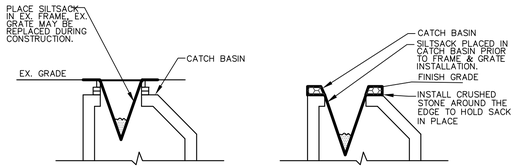
INSTALLATION:

1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

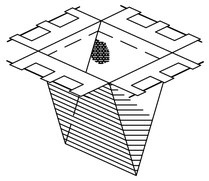
FILTER BARRIER
NOT TO SCALE

WINTER EROSION CONTROL MEASURES:

THE WINTER CONSTRUCTION PERIOD IS FROM OCTOBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD.
WINTER EXCAVATION AND EART



EXISTING BASIN NEW INSTALLATION

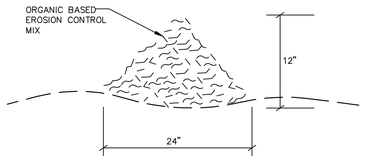


SILT SACK PROTECTION

NOTES:

PRIOR TO FINAL GRADING AND PAVING OPERATIONS BEGIN A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG I) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

1 CATCH BASIN PROTECTION DETAIL (FOR PAVED AREAS)
NOT TO SCALE



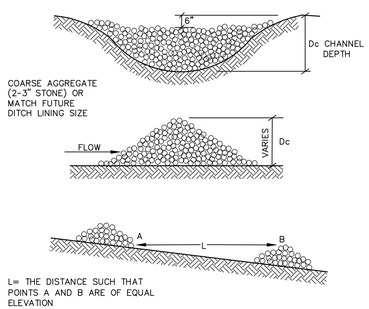
COMPOSITION

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, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.

INSTALLATION:

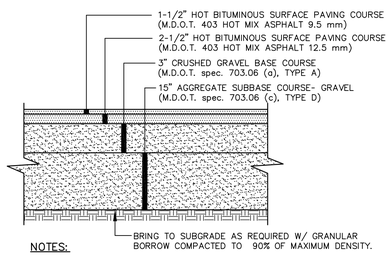
1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.
2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE POTENTIAL OF WASH OUTS UNDER THE BARRIER.
3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.
4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS AND CLOSED STORM SYSTEMS AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

2 EROSION CONTROL MIX BERM
NOT TO SCALE



L= THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

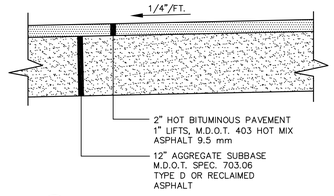
3 STONE CHECK DAM
NOT TO SCALE



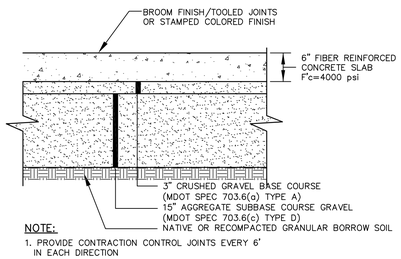
NOTES:

1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

4 TYP. PAVED PARKING LOT SECTION
NOT TO SCALE



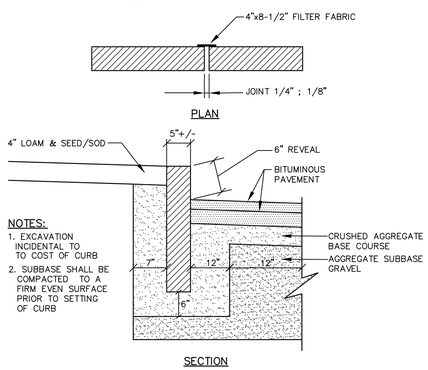
5 BITUMINOUS SIDEWALK
NOT TO SCALE



NOTE:

1. PROVIDE CONTRACTION CONTROL JOINTS EVERY 6' IN EACH DIRECTION

6 CONCRETE SLAB FOR SOLIDWASTE ENCLOSURE, TRANSFORMER, AND GENERATOR PAD
NOT TO SCALE

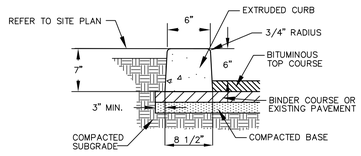


NOTES:

1. EXCAVATION INCIDENTAL TO TO COST OF CURB
2. SUBBASE SHALL BE COMPACTED TO A FIRM EVEN SURFACE PRIOR TO SETTING OF CURB

SECTION

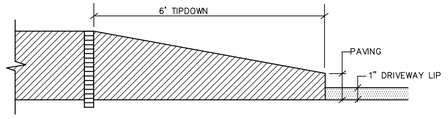
7 VERTICAL GRANITE CURB
NOT TO SCALE



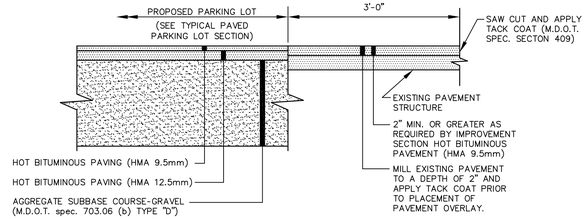
NOTE:

USE SLOPED MOLD WHEREVER CURB ABUTS LANDSCAPE AREAS.

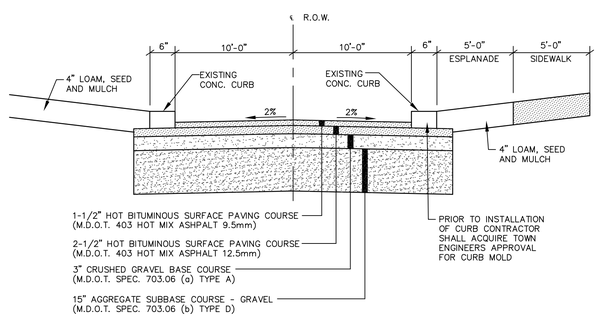
8 SLIPFORM CONCRETE CURB
NOT TO SCALE



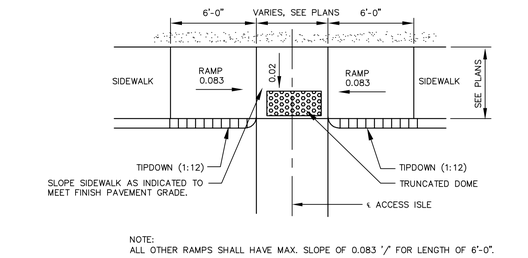
9 TYPICAL TIPDOWN CURB INSTALLATION
NOT TO SCALE



10 TYPICAL PAVEMENT JOINT
NOT TO SCALE

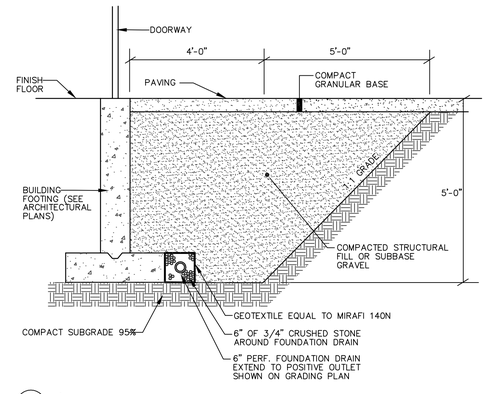


11 TYPICAL DRIVEWAY SECTION
NOT TO SCALE

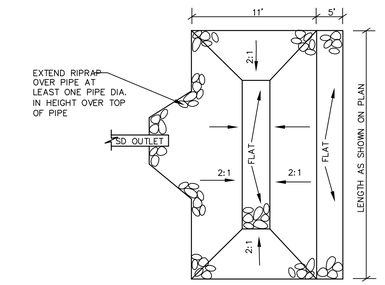


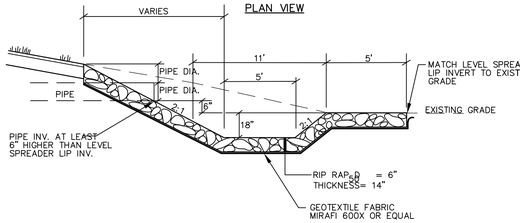
NOTE:
ALL OTHER RAMPS SHALL HAVE MAX. SLOPE OF 0.083 '/' FOR LENGTH OF 6'-0".

12 TYPICAL SIDEWALK/HANDICAP RAMP
NOT TO SCALE



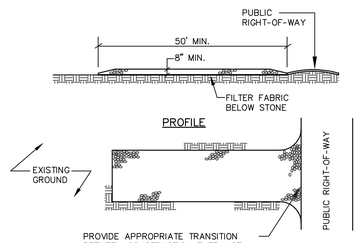
13 5' GRANULAR BASE @ DOOR THRESHOLD
NOT TO SCALE





SECTION

14 RIPRAP LEVEL SPREADER OUTLET
NOT TO SCALE



PLAN

NOTES:

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

15 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE

STATE OF MAINE — JOHN R. MARTIN — 9-18-15

Plan 9b

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS:
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

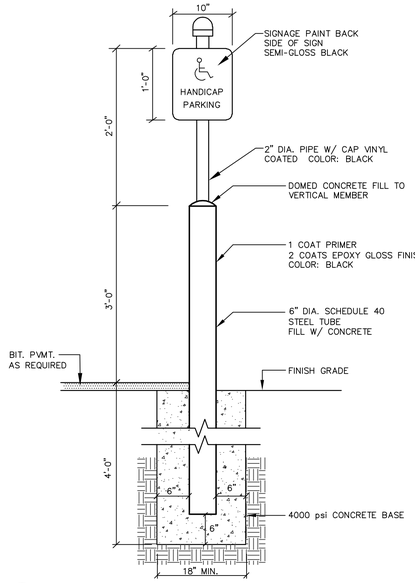
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel. 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel. 207-783-9583

DETAILS
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

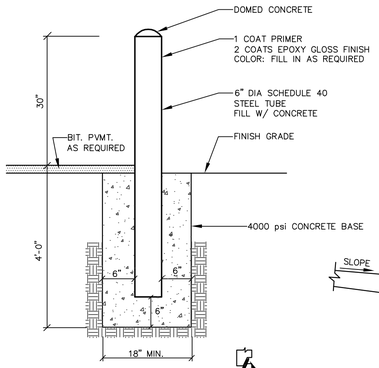
PROJECT NO.	SCALE
14432	NTS

SHEET 10 OF 14

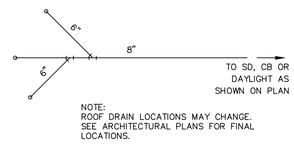
14432D.dwg, TAB: D2



1 HANDICAP SIGNS IN METAL BOLLARD
NOT TO SCALE

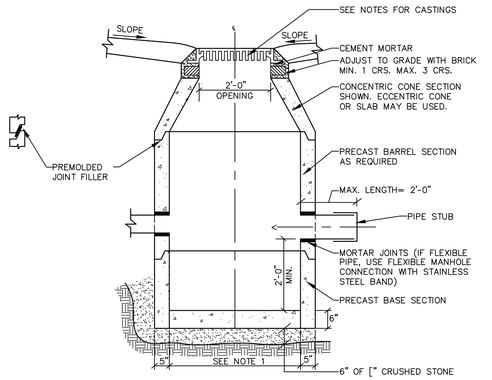


4 METAL BOLLARD
NOT TO SCALE



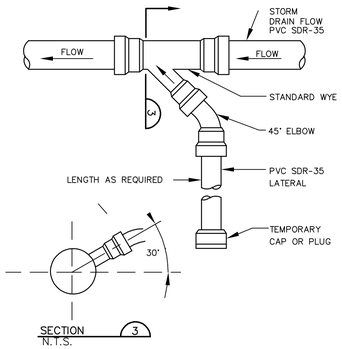
NOTE:
ROOF DRAIN LOCATIONS MAY CHANGE. SEE ARCHITECTURAL PLANS FOR FINAL LOCATIONS.

5 TYPICAL ROOF DRAIN
NOT TO SCALE

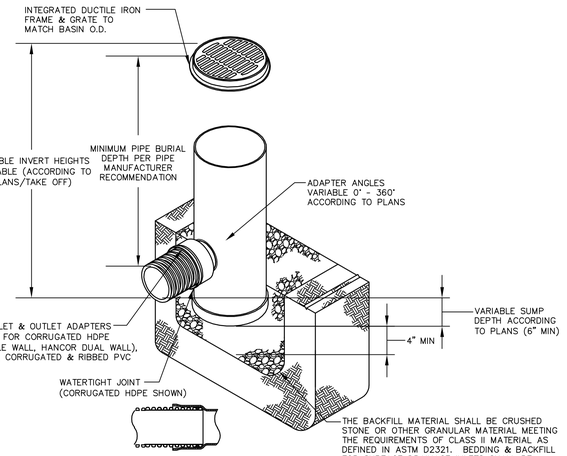


NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE EAST JORDAN FOUNDRY 5250 OR APPROVED EQUAL.
5. DRAINAGE MANHOLE FRAME AND COVER TO BE EAST JORDAN FOUNDRY 1122, TYPE A, OR APPROVED EQUAL. COVER SHALL BE MARKED "DRAIN".

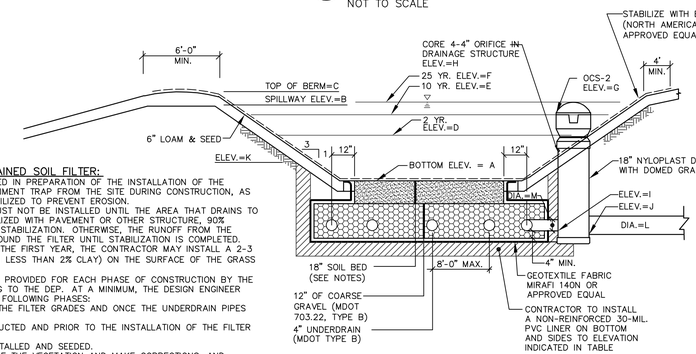
6 TYPICAL CONCRETE DRAINAGE STRUCTURE
NOT TO SCALE



8 ROOF DRAIN SERVICE CONNECTION
NOT TO SCALE



10 NYLOPLAST DRAIN BASIN
NOT TO SCALE



CONSTRUCTION NOTES FOR UNDERDRAINED SOIL FILTER:
1. THE AREA OF THE BASIN MAY BE EXCAVATED IN PREPARATION OF THE INSTALLATION OF THE UNDERDRAIN AND CAN BE USED FOR A SEDIMENT TRAP FROM THE SITE DURING CONSTRUCTION, AS LONG AS THE BASIN IS MULCHED AND STABILIZED TO PREVENT EROSION.
2. THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION. OTHERWISE, THE RUNOFF FROM THE CONTRIBUTING AREA MUST BE DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
3. IF VEGETATION IS NOT ESTABLISHED WITHIN THE FIRST YEAR, THE CONTRACTOR MAY INSTALL A 2-3 INCH LAYER OF SANDY LOAM TOPSOIL (WITH LESS THAN 2% CLAY) ON THE SURFACE OF THE GRASS FILTER AND RESEED/MULCH.
4. INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH THE REQUIRED REPORTING TO THE DEP. AT A MINIMUM, THE DESIGN ENGINEER SHALL INSPECT THE CONSTRUCTION AT THE FOLLOWING PHASES:
   A. AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
   B. AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
   C. AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED.
   D. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS, AND
   E. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN SHALL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.
5. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF THE FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL
   A. SUBMIT SAMPLES OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE GRABS FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
   B. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES, 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED BY HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
   C. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.

UNDERDRAINED FILTER NOTES:
1. THE SOIL BED SHALL CONSIST OF A SILTY SAND SOIL OR SOIL MIXTURE COMBINED WITH 20% TO 25% BY VOLUME OF A MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH. THE RESULTING MIXTURE MUST HAVE NO LESS THAN 8% PASSING THE 200 SIEVE AND SHALL HAVE A CLAY CONTENT OF LESS THAN 2%. THE SAND USED IN THE MIXTURE SHALL MEET THE FOLLOWING SPECIFICATIONS:
   SIEVE 3/8" - 100 PERCENT PASSING
   SIEVE #4 - 95-100 PERCENT PASSING
   SIEVE #8 - 80-100 PERCENT PASSING
   SIEVE #16 - 50-85 PERCENT PASSING
   SIEVE #30 - 25-60 PERCENT PASSING
   SIEVE #60 - 10-30 PERCENT PASSING
   SIEVE #100 - 2-10 PERCENT PASSING
   SIEVE #200 - 0-5 PERCENT PASSING
2. COMPACTION OF THE SOIL BED MATERIAL SHALL BE AVOIDED. IF COMPACTION OCCURS, ROTOTILL AGAIN PRIOR TO SEEDING OR SODDING.

EMBANKMENT CONSTRUCTION NOTES:
1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATIONS
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

POND DIMENSIONS

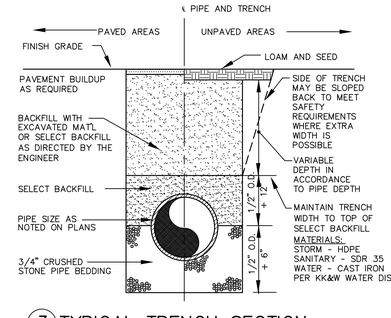
UNDERDRAIN GRASS FILTER	ELEVATION IN FEET										DIA (IN)	
	A	B	C	D	E	F	G	H	I	J	K	L	M
USF-1	125.00	127.5	128.0	126.28	126.74	126.96	127.0	126.00	122.83	122.83	126.0	12	4

SOIL BORING SUMMARY TABLE

BORING NO.	EXIST. GRADE (FT.)	EXIST. SHWT DEPTH (IN.)	EXIST. SHWT ELEV. (FT.)	PROPOSED BMP STRUCTURE	UNDERDRAIN INVERT ELEV. (FT.)
1	VARIES	VARIES	VARIES	UNDERDRAINED FILTER POND-USF-1	122.83

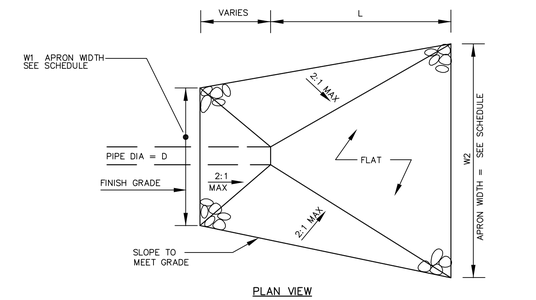
ENTIRE SITE IS OVERLAID BY LEDGE. SOIL REPORTS INDICATE THAT GROUNDWATER MAY BE WITHIN A COUPLE FEET OF SURFACE BASED UPON ARTESIAN CONDITIONS.

11 UNDERDRAINED SOIL FILTER BASIN
NOT TO SCALE

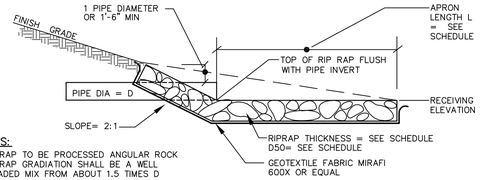


MATERIALS:
STORM - HDPE
SANITARY - SDR 35
WATER - CAST IRON PER KK&W WATER DISTRICT

3 TYPICAL TRENCH SECTION
NOT TO SCALE



PLAN VIEW



SECTION VIEW

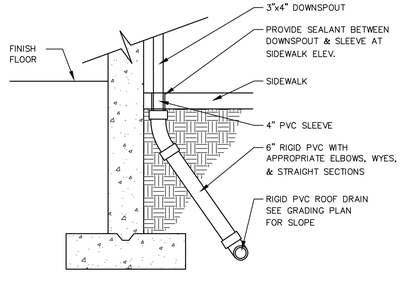
NOTES:
1. RIPRAP TO BE PROCESSED ANGULAR ROCK
2. RIPRAP GRADIATION SHALL BE A WELL GRADED MIX FROM ABOUT 1.5 TIMES D SIZE TO 25 PERCENT OF THE D SIZE
3. THE RIPRAP STONES SHALL BE CAREFULLY PLACED FROM THE TOE OF THE SLOPE UPWARD
4. STONES SHALL BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12" ONTO THE GEOTEXTILE
5. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH, UNIFORMLY SLOPED SURFACE

SIZING NOTES:
1. VALUES CALCULATED USING AN HDPE CULVERT AT A SLOPE OF 1% FLOWING FULL.
2. APRON LENGTHS AND RIPRAP D50 SIZES DETERMINED FROM THE OUTLET PROTECTION SIZING CHART IN THE MARCH 2003 MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL.
3. APRON WIDTHS W1 & W2 WERE BASED ON THE STANDARDS SET FORTH IN THE MARCH 2003 MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL SECTION E-3-2.
4. THESE DIMENSIONS ARE MINIMUM VALUES FOR EACH PIPE. IF NECESSARY, THESE DIMENSIONS CAN BE INCREASED AND ARE LABELED BY THE ENGINEER ON THE PLANS.

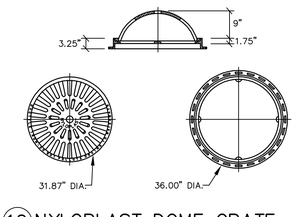
TYPICAL RIPRAP APRON SCHEDULE

CULVERT DIAMETER - D (IN.)	APRON LENGTH - L (FT.)	WIDTH -W1 (FT)	WIDTH -W2 (FT)	RIPRAP D50 (IN.)	RIPRAP THICKNESS (IN.)
12	8	3	9	6	14
15	10	4	12	6	14
18	13	5	15	7	16
24	18	6	20	8	18
36	29	9	32	11	25
42	33	11	37	12	27
48	39	12	43	16	36

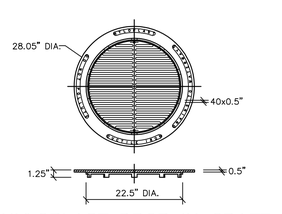
7 RIPRAP APRON
NOT TO SCALE



9 ROOF DRAIN CONNECTOR
NOT TO SCALE



12 NYLOPLAST DOME GRATE
NYLOPLAST #3099CGD NOT TO SCALE
USE AT ALL UNDERDRAINED PONDS



13 NYLOPLAST DROP IN GRATE
NYLOPLAST #2401DI NOT TO SCALE
USE AT ALL FIELD INLETS

9-18-15

Plan 9c

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS:
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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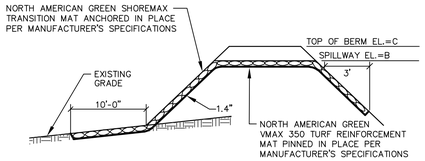
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-795-3535

DETAILS
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	NTS

SHEET 11 OF 14

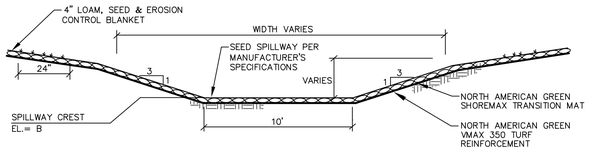
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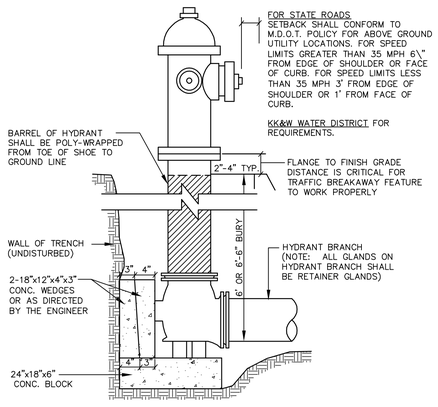
EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION.
2. PLACE BORROW MATERIAL IN 12" LIFTS. COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
3. EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

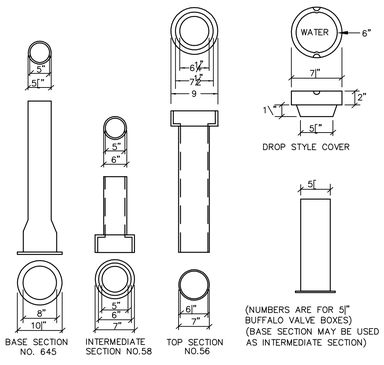
1 SPILLWAY SECTION
NOT TO SCALE



2 EMERGENCY SPILLWAY CROSS-SECTION
NOT TO SCALE

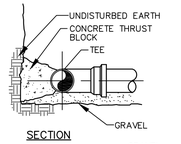


3 TYPICAL HYDRANT INSTALLATION
NOT TO SCALE



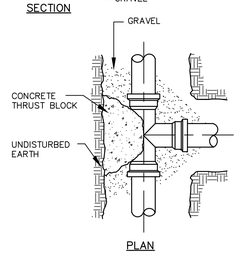
MATERIALS TO CONFORM WITH KK&W WATER DISTRICT

4 VALVE BOX & COVER
NOT TO SCALE

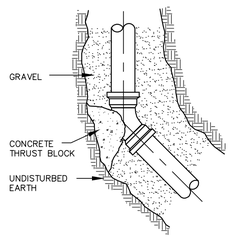


SECTION

CONCRETE THRUST BLOCK SIZE REQUIREMENTS				
		SQ. FT. OF BEARING ON UNDISTURBED SOIL		
FITTINGS		90° BENDS	45° BENDS	TEES AND PLUGS
PIPE SIZE	6"	4.0	2.0	3.0
	8"	8.0	4.0	6.0
	12"	15	10	10

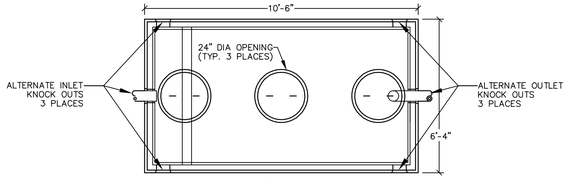


PLAN

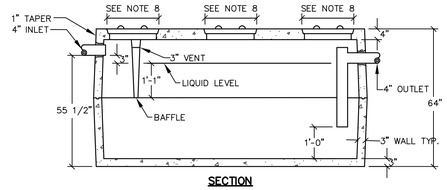


45° BEND

5 WATER TEE & BEND DETAIL
NOT TO SCALE



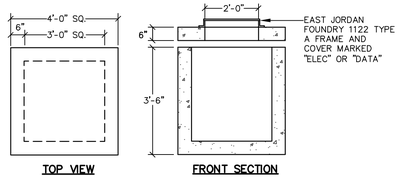
TOP VIEW



SECTION

NOTES:
1. STRUCTURE SHALL BE 1,500 GALLON GREASE TRAP AS MANUFACTURED BY PRECAST CONCRETE PRODUCTS OF MAINE, INC. (ITEM #A-904) OR APPROVED EQUAL.
2. CONCRETE 4000 PSI AT 28 DAYS.
3. INLET BAFFLE IS PRECAST AS ONE UNIT WITH THE TOP SECTION OF THE SEPTIC TANK.
4. TANKS REINFORCED WITH 6X6X10 G.A.WIRE.
5. KEYED JOINTS SEALED WITH ASPHALT SEALANT.
6. HEAVY DUTY SEPTIC TANK TOPS REINFORCED WITH 1/2" REBAR ON 6" CENTERS EACH WAY.
7. GREASE FILTER AVAILABLE.
8. PROVIDE PRECAST SECTIONS AND EAST JORDAN FOUNDRY 1122 TYPE A FRAME AND COVER MARKED "SEWER"

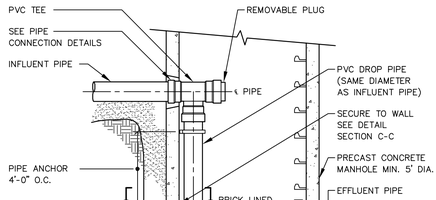
6 1,500 GALLON GREASE TRAP
NOT TO SCALE



TOP VIEW FRONT SECTION

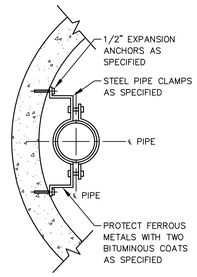
NOTES:
1. STRUCTURE SHALL BE 3' SQ UTILITY BOX WITH 6" WALLS AS MANUFACTURED BY PRECAST CONCRETE PRODUCTS OF MAINE, INC. (ITEM #B-14) OR APPROVED EQUAL.
2. CONCRETE 4000 PSI AT 28 DAYS.
3. STRUCTURE TO BE H-20 LOADED.
4. OPENINGS AS NEEDED.

7 UTILITY PULL BOX
NOT TO SCALE

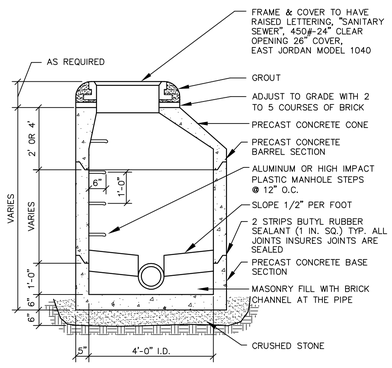


NOTE:
MINIMUM 5'-0" DIA. MANHOLES SHALL BE USED AT ALL DROP MANHOLE LOCATIONS.

8 PVC DROP CONNECTION (INTERNAL)
NOT TO SCALE

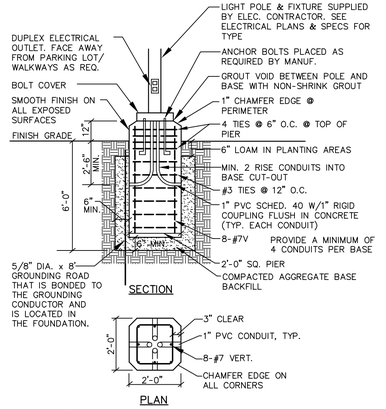


SECTION A-A



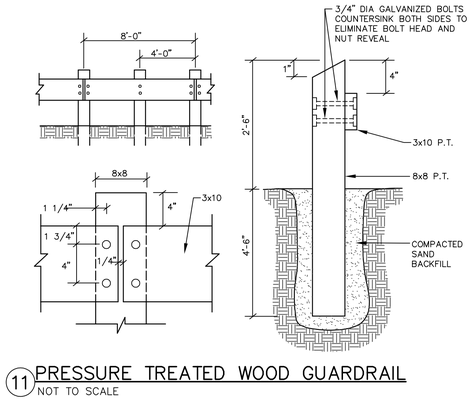
NOTE: PIPE CONNECTIONS SHALL BE WATERTIGHT FLEXIBLE BOOT CONNECTORS PROVIDES LEAKPROOF CONNECTION

9 PRECAST MANHOLE
NOT TO SCALE

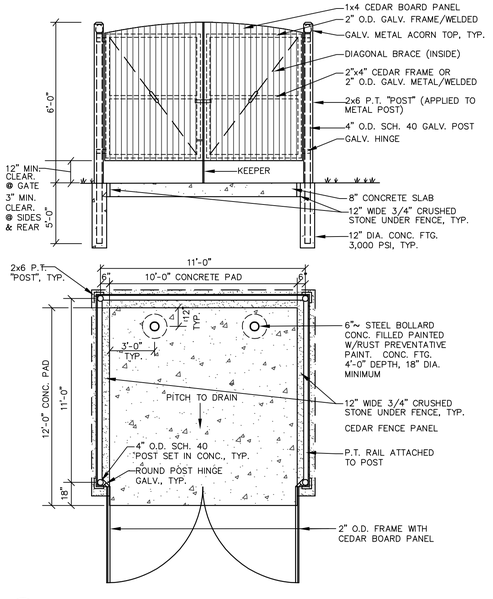


NOTES:
1. CONCRETE f'c=4000 psi.
2. REINF. STEEL GRADE 60 NEW BARS.
3. CONCRETE 3/4" AGG., 6 +/- 1% ENTRAINED AIR.
4. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
5. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT.
6. BID ALT.- CONTRACTOR MAY SUBSTITUTE PRECAST CONCRETE LIGHT POLE BASE EQUAL TO ABOVE SPEC.

10 LIGHT POLE BASE
NOT TO SCALE



11 PRESSURE TREATED WOOD GUARDRAIL
NOT TO SCALE



12 TYPICAL DUMPSTER ENCLOSURE
NOT TO SCALE

9-18-15

Plan 9d

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS:
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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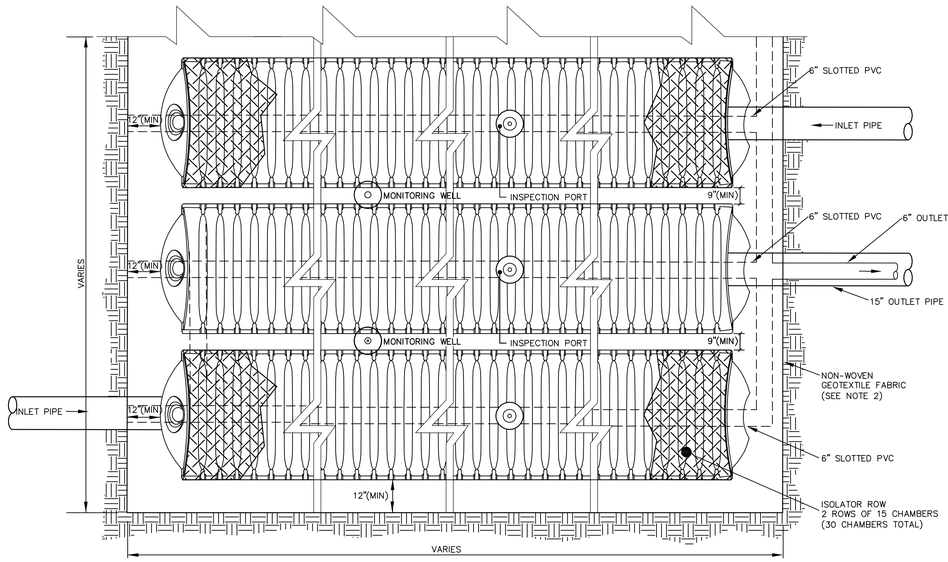
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75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-795-6535

DETAILS
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	NTS

SHEET 12 OF 14

144320.dwg, TAB:D4



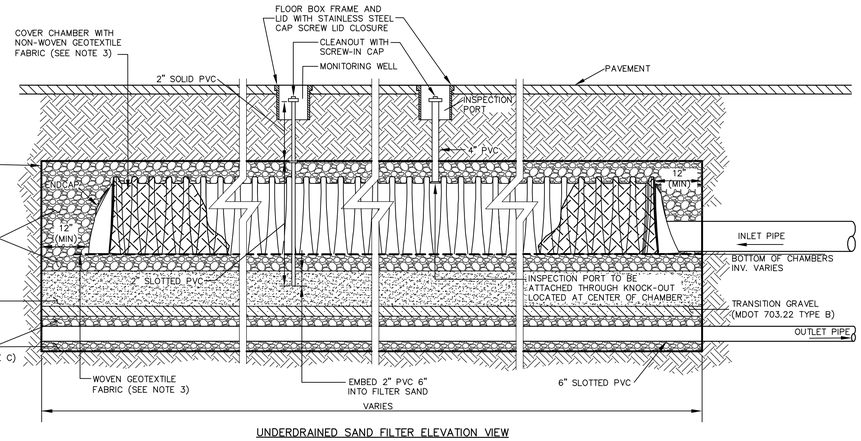
UNDERDRAINED SAND FILTER PLAN VIEW

SUBSURFACE UNDERDRAINED SAND FILTER NOTES:

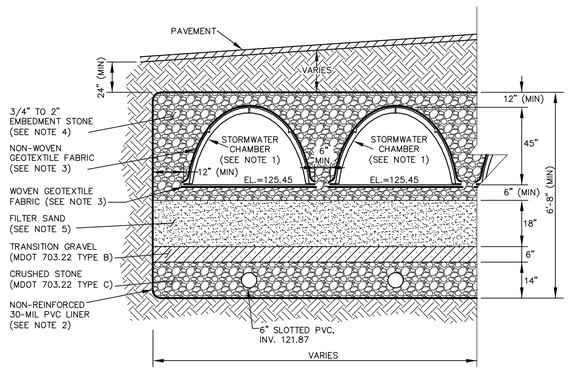
1. THE STORMWATER CHAMBER SHALL BE A STORMTECH MC-3500 OR EQUIVALENT SUBSURFACE STORAGE CHAMBER APPROVED BY THE ENGINEER.
2. THE ENTIRE SUBSURFACE SYSTEM, INCLUDING THE CRUSHED STONE STORAGE VOLUME, THE FILTER MEDIA, AND UNDERDRAIN MATERIALS, SHALL BE WRAPPED IN A NON-REINFORCED 30-MIL PVC LINER
3. A STRIP OF WOVEN GEOTEXTILE THAT MEETS AASHTO M288 CLASS ONE REQUIREMENTS (MIRAFI FW404 OR EQUIVALENT) MUST BE PLACED BETWEEN THE BOTTOM OF THE CHAMBER AND ITS STONE FOUNDATION. THIS FABRIC TRAPS SEDIMENTS AND PROTECTS THE UNDERLYING CRUSHED STONE. A SECOND STRIP OF NON-WOVEN AASHTO M288 CLASS 2 GEOTEXTILE (MIRAFI 160N OR EQUIVALENT) SHALL BE DRAPED OVER THE ENTIRE LENGTH OF THE CHAMBERS. THIS FABRIC WILL ALSO TRAP SEDIMENTS AND PROVIDE SEPARATION BETWEEN THE CHAMBERS AND SURROUNDING STONE.
4. THE EMBEDMENT STONE SURROUNDING THE CHAMBERS SHALL BE A WASHED, ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN 3/4 INCH AND 2 INCH. THE BOTTOM 6 INCH LAYER OF STONE THAT ACTS AS THE FOUNDATION BELOW THE CHAMBERS SHALL BE COMPACTED TO ACHIEVE A 95% STANDARD PROCTOR DENSITY.
5. THE SAND FILTER MATERIAL SHALL BE A UNIFORM MIX, FREE OF STONES LARGER THAN 2 INCHES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS. THE MATERIAL SHALL MEET THE SPECIFICATIONS FOR MDOT AGGREGATE SAND (MDOT #703.01). HOWEVER, THIS AGGREGATE SAND SHALL BE MIXED WITH LOAM TO ACHIEVE A MATERIAL WITH BETWEEN 8% AND 10% PASSING THE #200 SIEVE. THE LOAM USED IN THIS MIXTURE SHALL HAVE A MINIMAL CLAY CONTENT. THIS 18 INCH LAYER OF SAND FILTRATION MEDIA SHALL BE PLACED TO ACHIEVE A LEVEL OF COMPACTION BETWEEN 92% AND 95% STANDARD PROCTOR DENSITY.

CONSTRUCTION OVERSIGHT NOTES FOR SUBSURFACE SAND FILER:

1. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE CHAMBERS AND ITS FILTER COURSE MATERIAL TO BE BUILT ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBGRADE, FILTER BED MATERIAL PLACEMENT, INSTALLATION OF STONE, ISOLATOR ROW AND CHAMBER, SURROUNDING STONE, FABRIC LAYMENT AND STORMWATER OVERFLOW BYPASS CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO FINAL PAVER PLACEMENT.

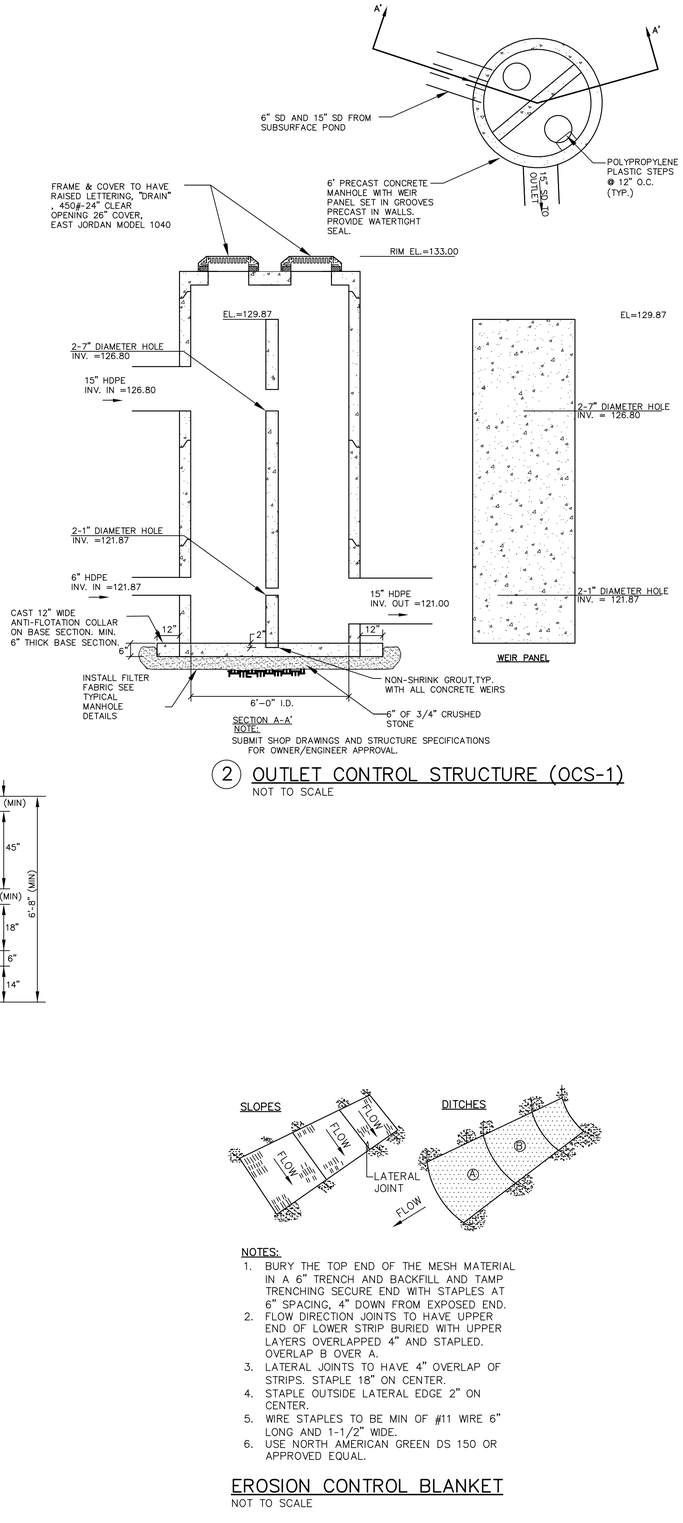


UNDERDRAINED SAND FILTER ELEVATION VIEW



UNDERDRAINED SAND FILTER SECTION

1 SUBSURFACE UNDERDRAINED SAND FILTER
NOT TO SCALE



NOTE:
SUBMIT SHOP DRAWINGS AND STRUCTURE SPECIFICATIONS FOR OWNER/ENGINEER APPROVAL.

2 OUTLET CONTROL STRUCTURE (OCS-1)
NOT TO SCALE

HOUSEKEEPING:

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 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.

NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET
NOT TO SCALE

11-20-15

Plan 10

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS:
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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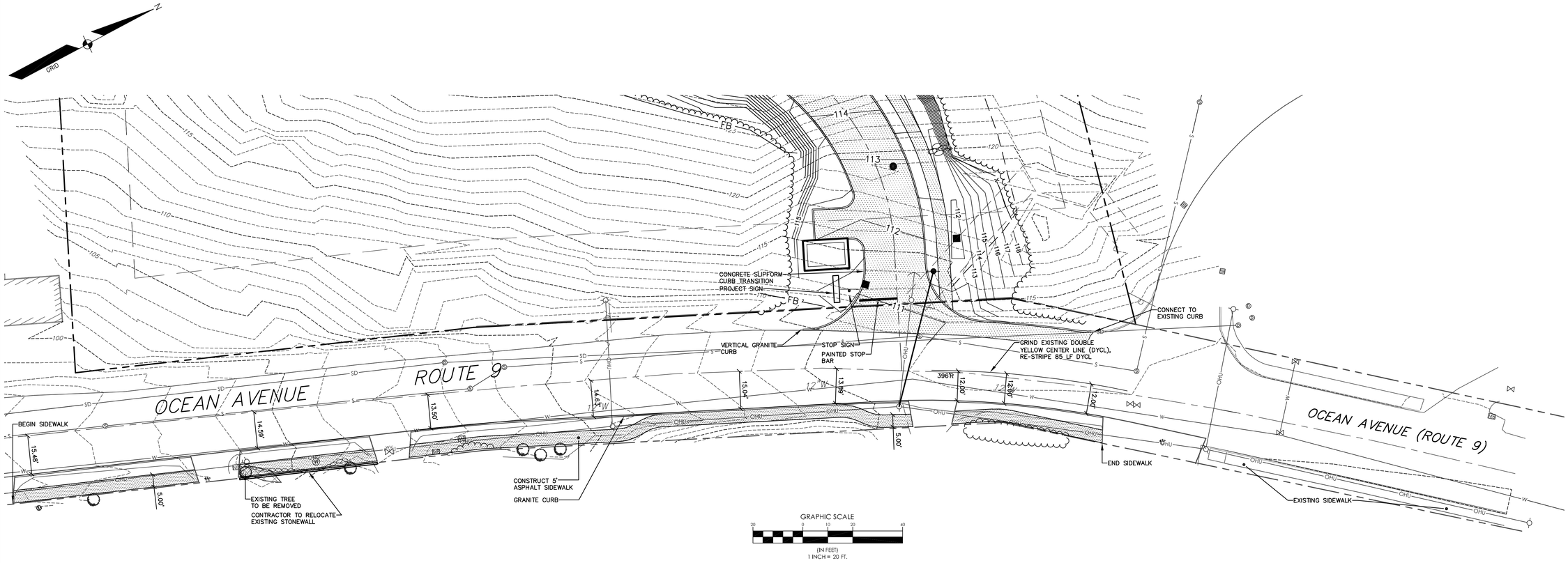
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STORMTECH STORMWATER DETAILS
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	NTS

SHEET 13 OF 14

14432D.dwg, TAB:D5



GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

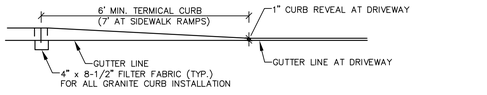
NOTES:
1. EXISTING MONUMENTATION SHALL BE PROTECTED AND REMAIN UNDISTURBED DURING CONSTRUCTION. ANY ALTERATION TO MONUMENTATION AS NECESSARY TO ACCOMMODATE CONSTRUCTION SHALL BE COORDINATED WITH CITY OF PORTLAND ENGINEERING DIVISION AND IN CONFORMANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS.

2. WHERE LEDGE REMOVAL IS NECESSARY TO ACCOMMODATE SIDEWALK CONSTRUCTION, LEDGE SHALL BE REMOVED SUCH THAT A MINIMUM CLEARANCE OF 2-FEET IS PROVIDED AT THE BACK EDGE OF SIDEWALK, AS MEASURED ALONG THE SIDEWALK SURFACE.

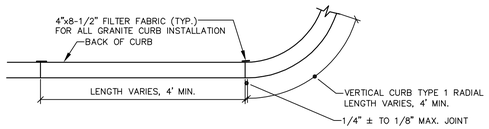
3. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION.

LEGEND

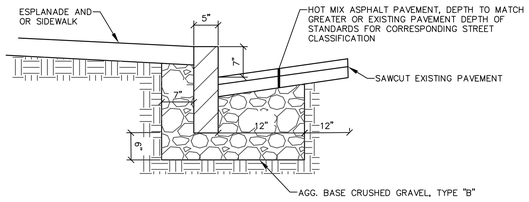
EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
SETBACK	
CENTERLINE	
IRON PIPE/ROD	
BUILDING	
EDGE PAVEMENT	
CURB LINE	
RETAINING WALL	
DECIDUOUS TREE	
SIGN	
W WATER	
WATER GATE VALVE	
WATER SHUT OFF	
HYDRANT	
WATER MANHOLE	
S SANITARY SEWER	
SANITARY MANHOLE	
SD STORM DRAIN	
DRAINAGE MANHOLE	
CATCH BASIN	
OHU OVERHEAD UTILITY	
UTILITY POLE	



TERMINAL CURB PROFILE

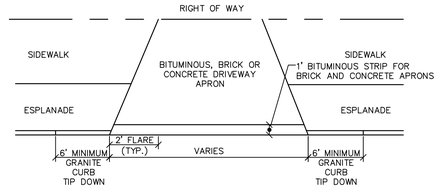


VERTICAL GRANITE CURB PLAN VIEW

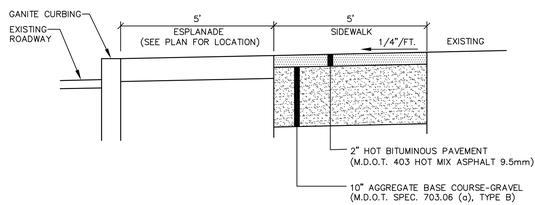


VERTICAL GRANITE CURB CROSS SECTION

VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREETS
NOT TO SCALE



DRIVEWAY APRON LAYOUT
NOT TO SCALE



BITUMINOUS SIDEWALK
NOT TO SCALE

11-20-15

Plan 11

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS
C	RAM	11-20-15	RESPONSE TO CITY COMMENTS
B	RAM	10-30-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

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OCEAN AVENUE SIDEWALK PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 20'

SHEET 14 OF 14

14432OCEAN SIDEWALK.dwg, TAB:OCEAN AVE SIDEWALK



LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (B, C)
- REACH
- 1 — WATERSHED LABEL
- 1 — REACH
- 1 — DETENTION POND
- SOILS BOUNDARY

11-20-15

Plan 12

DESIGNED	CHECKED
PDO	RAM

REV:	BY:	DATE:	STATUS:
B.	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A.	RAM	9-17-15	PLAN SUBMISSION TO CITY OF PORTLAND

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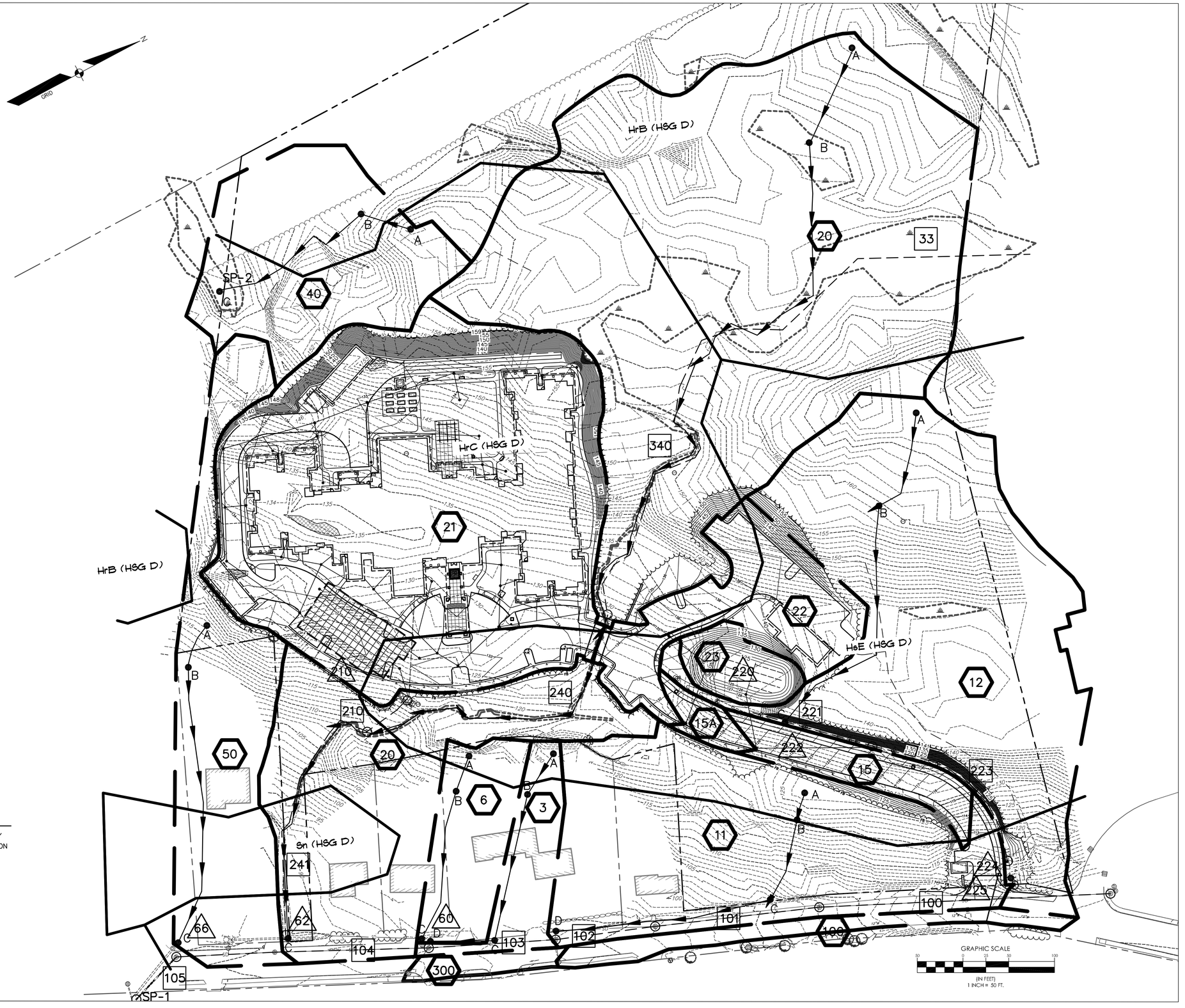
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75 John Roberts Rd. Suite 1A South Portland, ME. 04106 Tel: 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel: 207-753-9258

PRE DEVELOPMENT WATERSHED PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN RETIREMENT GROUP
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 50'

SHEET 1 OF 2

14432SMP.dwg, TAB:PRE



11-20-15

Plan 13

DESIGNED	CHECKED
PDO	RAM

REV.#	BY:	DATE:	STATUS:
B.	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A.	RAM	9-17-15	PLAN SUBMISSION TO CITY OF PORTLAND

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POST DEVELOPMENT WATERSHED PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN RETIREMENT GROUP
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 50'

SHEET 2 OF 2

14432SMF.dwg, TAB:POST

ELECTRICAL KEY NOTES:

1. ELECTRICAL MAIN DISTRIBUTION PANEL LOCATED IN ELECTRICAL ROOM. SEE ONE-LINE 1/E2.2a.
2. EMERGENCY STANDBY ENGINE GENERATOR. SEE SPECIFICATIONS ON SHEET E2.1, AND ONE-LINE DIAGRAM 1/E2.2a.
3. TELEPHONE TERMINAL BOARD LOCATED IN MECHANICAL ROOM.
4. TELEVISION TERMINAL BOARD LOCATED IN MECHANICAL ROOM.
5. CONNECT VIA LIGHTING CONTROLLER. SEE DETAIL 3/E2.2b.
6. COORDINATE WITH STRUCTURAL FOR ROUTING OF RACEWAY WHEN ROUTED UNDER BUILDING.
7. SEE ONE-LINE DIAGRAM 1/E2.2a FOR WIRE AND CONDUIT SIZE.
8. PAD MOUNTED UTILITY TRANSFORMER. 120/208 VOLT, 3 PHASE. COORDINATE WITH UTILITY FOR LOCATION AND SIZE.
9. PROVIDE A MINIMUM OF (2) 4" SCHEDULE 40 PVC CONDUIT WITH PULL STRING FROM TELEPHONE TERMINAL BOARD TO TELEPHONE COMPANY SERVICE POINT. COORDINATE EXACT ROUTING, CONDUIT SIZE AND QUANTITY, AND TERMINATION POINT WITH TELEPHONE SERVICE PROVIDER.
   PROVIDE A MINIMUM OF (2) 4" SCHEDULE 40 PVC CONDUIT WITH PULL STRING FROM TELEVISION TERMINAL BOARD TO TELEVISION COMPANY SERVICE POINT. COORDINATE EXACT ROUTING, CONDUIT SIZE AND QUANTITY, AND TERMINATION POINT WITH TELEVISION SERVICE PROVIDER.
10. UNDERGROUND PRIMARY SERVICE. COORDINATE SERVICE AND PAY ALL CHARGES AS REQUIRED BY SERVING UTILITY. PROVIDE CONDUIT AND RACEWAY FROM TRANSFORMER TO UTILITY SERVICE VAULT AS REQUIRED BY SERVICE UTILITY. INSTALL RACEWAY A MINIMUM OF 36" BELOW GRADE. COORDINATE EXACT ROUTING, CONDUIT SIZE AND QUANTITY, INSTALLATION REQUIREMENTS, AND TERMINATION POINT WITH UTILITY.

ELECTRICAL GENERAL NOTES:

1. OUTSIDE THE BUILDING AND BELOW GRADE, WIRING MAY BE IN SCHEDULE-40 PVC CONDUIT WITH GROUNDING CONDUCTOR IF ACCEPTABLE BY LOCAL CODES. NOT LESS THAN 3/4" CONDUIT.
2. INSTALL EXTERIOR CIRCUITS UNDERGROUND. DIRECT BURIED BRANCH CIRCUIT WIRING OUTSIDE THE BUILDING AND BELOW GRADE MY BE IN TYPE UF MOISTURE RESISTANT CABLE, NOT LESS THAN 10AWG CONDUCTORS OR AS NOTED. COMPLY WITH ELECTRICAL CODE AS REQUIRED AND NOTED ON COVER.

SEE A1.1 FOR ADDITIONAL REQUIREMENTS.

SEE E2.1 FOR LIGHT FIXTURE SPECIFICATIONS.

Plan 14

lenity architecture
3150 Ketta Court SE, Salem, Oregon 97301
P 503 399 1090 F 503 399 0565 w lenityarchitecture.com

COLSON AND COLSON
GENERAL CONTRACTOR, INC.
2260 McGILCHRIST STREET SE, SUITE 200
SALEM, OREGON, 97302
PHONE (503) 586-7401

PORTLAND
RETIREMENT RESIDENCE
802 OCEAN AVE. PORTLAND, MAINE 04103

ELECTRICAL SITE PLAN

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DATE
8/28/2015

REVISED DATE

SHEET
E1.0A

1 E1.0A SITE PLAN ELECTICAL
SCALE: 1" = 30'-0"

save:9/11/2015 5:19 PM zachary plot:9/11/2015 5:19 PM zachary file:z:\lawton\mines-portland\sketch1.0 site plan.dwg E1.0A

SEE A1.1 FOR ADDITIONAL REQUIREMENTS.

SEE E2.1 FOR LIGHT FIXTURE SPECIFICATIONS.

Plan 15

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3150 Ketta Court SE, Salem, Oregon 97301
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COLSON AND COLSON
GENERAL CONTRACTOR, INC.
2260 McGILCHRIST STREET SE, SUITE 200
SALEM, OREGON, 97302
PHONE (503) 586-7401

PORTLAND
RETIREMENT RESIDENCE
802 OCEAN AVE. PORTLAND, MAINE 04103

SITE LIGHTING PHOTOMETRIC PLAN OVERALL SITE

DATE
8/28/2015

REVISED DATE
.
.
.
.

SHEET
E1.0C

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150 SUITE RETIREMENT FACILITY (4 STORY)

OCEAN AVENUE

SEASONAL RUN

SITE LIGHTING PHOTOMETRIC PLAN
1 / E1.0C — OVERALL SITE
SCALE: 1" = 30'-0"

save:8/11/2015 5:19 PM zachary plot:8/11/2015 5:21 PM zachary file:z:\newfromnine-portland\sheet\1.0 site plan.dwg E1.0C

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking Area	+	1.7 fc	4.3 fc	0.4 fc	10.8:1	4.3:1
Property Line	+	0.0 fc	0.1 fc	0.0 fc	-	-

SEE A1.1 FOR ADDITIONAL REQUIREMENTS.

SEE E2.1 FOR LIGHT FIXTURE SPECIFICATIONS.

150 SUITE RETIREMENT FACILITY (4 STORY)

GARDEN SHED
RAISED GARDEN PLANTERS
BENCH
BENCHES
LAWN ACTIVITY
REFUSE ENCLOSURE
SERVICE DELIVERIES
FIRE LANE
GARAGE
PATIO COVER
COLUMN/URN
SEAT WALL
FIRE PIT
BENCH
COVERED PATIO
COLORED/SCORED CONCRETE PATIO
135.0 FFE
KITCHEN
MECH.
ELEC.
GREASE INTERCEPTOR
TRANSFORMER
COVERED ENTRANCE
FLAG POLE
GEN
WETLAND UNDISTURBED
SEASONAL RUN
PROPOSED DETENTION
PRESERVE EXISTING TREES
16' SET BACK
25' SET BACK
PROJECT SIGN
WALK TO GARAGE

BENCHMARK
VERT. SPK. ROOT
24" WHITE PINE
ELEVATION: 122.43'

BENCHMARK
EXISTING DRILL
HOLE IN LEDGE
ELEVATION: 104.83'

N/F
WILLIAM H. JR., & LINDA R. CARR
19165/114
MAP 416 BLOCK A LOT 013

N/F
HEATHER A. LIEBL
24446/17
MAP 416 BLOCK A LOT 014

N/F
TAI XUAN HUYNH & TRUC MI THI NGUYEN
28600/63
MAP 416 BLOCK A LOT 008

N/F
RICHARD M. & MARY H. PERKINS
26172/343
MAP 416 BLOCK A LOT 004

N/F
SHIRLEY A. & TIMOTHY W. CAIAZZO
4552/113
MAP 416 BLOCK A LOT 005

S 66°16'58" E 319.60'
N 65°03'23" W 233.27'
S 25°34'21" W 24.82'
S 65°02'46" E 181.79'
N 65°19'11" W 183.15'
S 24°55'08" W 216.07'
S 21°29'19" W 160.65'
S 19°42'11" W 77.66'
S 16°45'30" W 59.83'
S 15°19'00" W 76.84'
S 25°09'40" W 36.08'
S 33°34'00" W 53.42'
S 15°22'37" W 69.26'
S 78°12'23" E 571.55'
N 54°37'36" W 107.71'
S 18°05'41" W

L1
L2

1 E1.0B SITE LIGHTING PHOTOMETRIC PLAN
PARKING AREA AND PROPERTY LINE
SCALE: 1" = 30'-0"

OCEAN AVENUE

OCEAN AVENUE STATE ROUTE 9

Plan 16

lenity architecture
3150 Kettle Court SE, Salem, Oregon 97301
p 503 399 1090 f 503 399 0565 w lenityarchitecture.com

COLSON AND COLSON
GENERAL CONTRACTOR, INC.
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PORTLAND
RETIREMENT RESIDENCE
802 OCEAN AVE. PORTLAND, MAINE 04103

SITE LIGHTING
PHOTOMETRIC PLAN
PARKING/PL

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DATE
8/28/2015

REVISED DATE

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SHORT CIRCUIT, COMPONENT PROTECTION, FLASH HAZARD ANALYSIS, AND SELECTIVE COORDINATION STUDY

PART 1 GENERAL

1.1 SUMMARY

A. Provide a short-circuit, component protection, flash hazard analysis, and selective coordination study for the emergency electrical distribution system from all power sources (normal and emergency) down to the branch circuit overcurrent protective device and equipment per NEC 700.27.

1.2 PURPOSE

A. The study shall calculate the available short-circuit current at each point in the emergency electrical distribution system. The overcurrent protective devices shall have an interrupting rating equal to or greater than the available short-circuit current at the point of application.

B. The study shall examine proper protection of emergency electrical system components and utilization equipment such that the equipment has a sufficient short-circuit current rating. If a specific type of overcurrent protective device is required for proper protection of equipment, it shall be noted in the report and reflected in the design of the system.

C. The study shall include a flash hazard analysis for electrical distribution equipment where required per codes and standards. The analysis shall determine the flash protection boundary, incident energy, and required level of personal protective equipment (PPE) for workers at the electrical distribution equipment. The flash protection boundary and incident energy shall be determined based upon a working distance of 18 inches. The electrical distribution equipment shall be field marked with this information in accordance with codes and standards.

D. The emergency overcurrent protective devices shall be analyzed for selective coordination. This analysis shall identify any potential selective coordination problems up the available short-circuit current. Any areas where the overcurrent protective devices are not selectively coordinated shall be explicitly noted and recommendations shall be made to achieve selective coordination if desired.

1.3 REFERENCES

A. The study shall be completed in accordance with the latest edition of IEEE Standard 242 - Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.

B. The flash hazard analysis shall be completed in accordance with latest editions of NFPA 70E - Standard for Electrical Safety Requirements for Employee Workplaces and IEEE Standard 1584 - Guide for Performing Arc-Flash Hazard Calculations.

1.4 QUALIFICATIONS

A. The company and individual(s) performing the study shall have a minimum 5 years documented experience in power system analysis and completed projects of similar size and scope. The individual(s) performing the study shall be a registered Professional Engineer in the state of the project location.

B. The company performing study shall have the capability and experience to provide assistance during system start up.

1.5 SCHEDULING

A. The selection of the company and individual performing the study shall be submitted and approved by the design engineer prior to the start of the study.

B. The study shall be completed and submitted prior to the equipment submittals. The study will be reviewed during the equipment submittal and review process. Any changes to the study or equipment will be noted in the returned submittals.

C. Final approval of both the study and equipment submittals shall be given prior to the release of equipment for manufacturing.

1.6 SUBMITTALS

A. The results of the study shall be summarized in report form. Submit 10 copies for review and approval by the design engineer.

B. The results of the study shall include the following:

1. Descriptions, purpose, basis, and scope of study.
2. Fault current calculations including definition of terms and guide for interpretation of computer printout.
3. Tabulations of protective device and equipment ratings versus calculated short-circuit duties, and commentary regarding same.
4. Flash hazard analysis report for electrical distribution equipment.
5. Time versus current curves or fuse selectivity ratio analysis, with tabulations of overcurrent protective device settings, and selective coordination analysis and commentary regarding same.

C. If power company review and approval is required, the results of the study shall be submitted to the power company for review and approval. Approved copies from the power company shall be forwarded to the design engineer.

1.7 SUBMITTALS - CLOSEOUT

A. Submit ten copies of the final approved study to the electrical design engineer.

PART 2 PRODUCTS

2.1 REQUIREMENTS

A. The short circuit and flash hazard analysis study shall be completed with the aid of a computer software program where possible.

B. The available short-circuit current, corresponding required interrupting or short-circuit current ratings of components, and flash hazard analysis data, shall be calculated based upon the 3-phase bolted short-circuit current and phase to ground/neutral short-circuit current at each of the following (if applicable):

1. Utility Service Point.
2. Medium voltage switchgear.
3. Medium voltage motor controllers.
4. Medium/Low-Voltage Unit Substations.
5. Low-voltage switchgear or switchboards.
6. Distribution panelboards.
7. Branch circuit panelboards.
8. Motor control centers.
9. Busway and Busplugs.
10. Other significant equipment or utilization equipment.

C. The study shall include the following:

1. Calculation methods and assumptions.
2. One-line diagram (with available short-circuit current and flash hazard data identified).
3. Calculations shall identify:
   a. Available short-circuit currents from all power sources (kVA)
   b. Motor fault contribution
   c. Component impedance data
   d. X to R ratio
   e. Symmetrical and asymmetrical fault current characteristics
   f. Flash hazard analysis data
4. Tabulation of all calculation quantities and results
5. Detailed description of each protective device identifying its type, function, manufacturer, interrupting rating, ampere rating, selected settings, and time-current characteristics.
6. System component characteristic curves or short-circuit current ratings identified and/or plotted up to the maximum symmetrical fault current to which the component is exposed. Include the following where applicable:
   a. Medium voltage equipment characteristics
   b. Low voltage equipment characteristics
   c. ICEA conductor damage characteristics
   d. Transformer characteristics
   e. Motor and motor circuit equipment characteristics
   f. Generator and transfer switch (manual or automatic) characteristics
   g. Other system equipment characteristics.
7. Time-current curves prepared graphically on full size, log-log forms with title, one-line diagram, and specific system components analyzed.
8. Conclusions regarding interrupting rating for overcurrent protective devices, flash hazard analysis, protection of components, selective coordination, and recommendations and requirements on the same.

PART 3 EXECUTION

3.1 INSTALLATION/START-UP

A. The contractor shall install equipment and protective devices in accordance with the approved short-circuit and selective coordination study.

B. The contractor shall field mark equipment with flash hazard analysis data as required in accordance with codes and standards.

C. The company performing the study shall provide assistance to the installing contractor during start up of electrical system and equipment as needed.

SECTION 16010 - GENERAL CONDITIONS

The electrical subcontractor is bound by the general and supplementary conditions, and Division I.

Document Priorities-

In the case of discrepancies, the construction documents take precedence as follows:

1. Change orders
2. Addendum
3. Specifications
4. Large scale drawings
5. Small scale drawings
6. Submittal and equipment reviews
7. Substitution requests.

Specifications take precedence over substitution requests and submittal reviews.
Where discrepancies/duplications occur, the more stringent requirements shall be provided.

Products under this contract shall meet minimum specification requirements in detail without exception unless specifically noted and approved as provided in these specifications. Equipment submitted for review must clearly state on cover sheet any differences from specified product. Equipment substitution or submittal review does not relieve contractor from meeting all requirements of specified item.

Scope of Electrical Work-

Materials and workmanship shall be furnished and installed for complete, tested, and operating electrical systems as shown on the drawings and specified herein.

Electrical work is to include the electrical service. Complete to the point of connection with the serving utility. Any changes of or work required by the serving utility, are part of this work and shall be fully included in the bid price.

Work is also to include main distribution panel, feeder system and branch circuit panels. Complete branch circuit wiring. Light fixtures, wall switches, receptacles and similar items, exterior lighting and wiring, and wiring and connection to mechanical equipment, all fire alarm, intercom/emergency call system, phone system, unit phone wires, and kitchen equipment as required. Coordinate services with all trades. Coordinate locations of wiring conduit and other runs with other trades in confined areas such as in the corridor ceilings.

Quality Assurance-

Work is to comply to the governing electrical codes as required and noted on the cover sheet, and shall comply with all applicable local codes, rules, and ordinances. All regulations, requirements and charges of the local utility company shall be complied with and paid. Materials used are to be listed by locally accepted listing agencies. Provide work per industry standards of acceptance and industry practice.

Coordination-

Check all equipment locations and connections on the site for coordination with other divisions equipment, connections, structure, and the like. Location of electrical equipment shall not impeed reasonable placement of furnishings including artwork. Locate readily accessible and readily used equipment such as switches near ends of walls where shown as to not impeed practicle use of walls for furnishings and artwork.

Test all parts of system at completion of installation. Instruct owners personnel in all aspects of operation.

Warranty-

Contractor to provide full warranty on materials and workmanship for a period of one year after final completion of project.

Trenching and Backfill-

Follow trenching and back fill requirements of local codes and ordinances, and pipe trenching detail on drawings.

PROTECTION OF PENETRATIONS AT FIRE RATED CONSTRUCTION

Protect penetrations of fire rated or draft stop construction. Typical for penetrations including conduit, fixtures, outlets, pipes, panel boxes, etc. Protection to be consistent with type of materials:

1. Metal materials extending minimum 18 each side of surface -- draft seal with one of the following:

   a. Listed silicone foam
   b. Other listed product as approved

2. Other materials including plastic conduits and cables: UL listed fire barrier penetration sealing system. Install according to manufacturers instructions. Listing and approvals:

   -ASTM E-119 fire test of building construction and materials.
   -UL 1479 firestops, tests of through penetrations.
   -ASTM E-814 fire tests of through penetration fire stops.
   -ICBO, BOCA, SBBC, NBC (Nat. Research Bd. REPORT NRB-243).
   -As required by Arch.

Electrical Devices in Common Wall-

Electrical boxes shown in common walls serving adjacent rooms are to be offset from each other a minimum of 24" horizontally. Do not mount boxes back to back in any location.

SECTION 16026-Submittals

Provide 5 (five) copies of shop drawings and catalog cuts of materials and equipment listed to architect prior to ordering of equipment. Alternate equipment will be considered for use only with proper Pre-Bid submittal, CSI substitution request form and procedures as given in the general and supplementary conditions.
Submittal schedule for product evaluation indicated below. Each item requiring a submittal is given the following code:

L Manufacturer's Label
C Manufacturer's Catalog data (cuts)
E Technical and Engineering data
S Shop drawings
SA Samples
CR Certifications/Qualifications

16100 - Wiring Systems - L

16010 - Firestopping (For Arch. review) - C, E

16140 - Wiring Devices - C, S

16170 - Disconnects - C, S

16195 - Identification - L

16400 - Panels - C, E, ,S

16500 - Lighting - C, E, S

16520 - Timing Switches - C, E, S

16590 - Heaters - C, E, S

16600 - Emergency Generator System - C, E, S, CR
(Regardless of Supplier, Contractor shall submit generator/ATS information)

16700 - Low Voltage - C, E, S, CR

SECTION 16100 - Wiring Systems

Interior Raceway System: Power conductors shall be in EMT or MC cable throughout common areas of the facility, as detailed in NEC Article 518, including corridors, assembly areas, meeting areas and common gathering areas. Provide EMT in unfinished spaces where raceway is not concealed such as in mechanical and electrical rooms as required by the NEC and local codes. All raceway in finished areas shall be concealed. Where conductors are exposed above a suspended ceiling, provide in a listed metal raceway. NMSC may be used in residential suites meeting the requirements of NEC 334.10 and as permitted by local codes. Fire alarm conductors shall be installed in accordance with NEC Article 760. Provide RMC for interior concrete encased raceway or where EMT is subject to damage.

Aluminum conductors may be used in services and feeders 60A and larger. All branch circuit conductors shall be copper conductor. Sizes indicated on drawing are based upon copper ampacities.

Provide conductors with type THHN insulation in dry locations only. Provide conductors with type THWN, THW and XHHW in dry damp or wet locations.

Conductors smaller than #12 AWG for branch circuits not permitted.

Conductors shall not be less then 12AWG. All other circuits shall be sized as noted or as required by equipment served.

Liquid tight flexible metallic conduit shall be used in short (2 foot nominal) lengths for all equipment which: Vibrates, May need to be moved for servicing, or is exposed to weather.

Outside the building and below grade, wiring may be in schedule-40 PVC conduit with grounding conductor if acceptable by local codes.

Install exterior circuits underground. Direct buried branch circuit wiring outside the building and below grade my be in type UF moisture resistant cable, not less than 10AWG conductors or as noted. Comply with electrical code as required and noted on cover.

Clean and clear-out raceway prior to installation of any conductor/pull string. Provide pull string in empty raceways. Provide listed pulling lubricant/compound for installing conductors in raceway systems.

SECTION 16140 - Wiring Devices

Duplex receptacles: 2 blade grounding type, nylon face.
15 Amp, NEMA 5-15R, Leviton Decora 5325, (Residential Grade) in suites.
20 Amp, NEMA 5-20R, Leviton Decora 16352, (Spec. Grade) in Common areas.
G.F.C.I. Receptacles: 2 blade grounding type, nylon face, 20A NEMA 5-20R.

Tamper resistant receptacles required in all locations in the manager and co-manager suites listed under NEC section 210.52.

Switches: Back & side wired 120 / 277v AC Leviton Decora AC quiet rocker switches 20-amp Spec. Grade in public areas, and 15-amp Residential Grade in suites.

Dimming Switch: 1500w, 120v, 60hz. Leviton 81500 Series. With slide to off function.
Other wiring devices not listed here or elsewhere on drawings to be Specification Grade in common areas, Residential Grade in suites, contractor selected, subject to approval.

Automatic wall switches: Dual technology, conformance with Energy Code. Coverage verified by manufacturer SensorSwitch WSD-PDT-W.

Ceiling Mounted Occupancy Sensor: Dual Technology, conformance with energy code, coverage verified by manufacturer. Complete system by sensor manufacturer. Sensor Switch CMR-PDT.

Devices (receptacles, switches, time switches) and cover plates shall be white, unless on emergency power, provide red receptacles and cover plate.
302 Stainless steel cover plates required in commercial kitchen.
Outdoor receptacles and receptacles indicated with "WP" weather proof shall utilize non-metallic in-use type protective weatherproof covers.

SECTION 16170 - Disconnects

Motor and circuit disconnects shall be UL listed. Constructed of not less than NEMA 1 where installed indoor dry locations. Enclosures for outdoor, or wet locations shall be not less than NEMA 3R. NEMA rating as required where installed. Rated at voltage connected not less than 240 Volts. Heavy duty, quick make, quick break. Number of poles, fusing, and ampacity as noted and required by Code. Solid ground, Solid neutral with Al/Cu compression or set-screw lugs. ON/OFF positions shall be clearly marked and lockable in OFF position. Provide interlock with defeater for authorized personnel. Interlock to prevent disconnect from being opened when "ON" or turned ON with cover open.

Provide disconnect per Code on all machines, HVAC equipment, water heaters including but not limited to: FSD's, AC units, Condenser units, commercial dishwasher, EF's, etc.

SECTION 16195 - Identification

Identify components with neatly printed labeled routed phenolic plastic signs, including any pertinent information for the owner. Panel directories to be typewritten on factory issued card, showing circuit number and description of use of each circuit. Permanently attach to inside of panel door.

The disconnecting means for each service, feeder or branch circuit originating on a switchboard or panelboard shall be legibly and durably marked to indicate its purpose unless such pupose is clearly evident, per NEC 100.22.

SECTION 16400 - Panels

Main panel to be Square D, or equal by Cutler-Hammer, Siemens (ITE), General Electric, or approved. Panel shall be sized, arrangement, and capacity as shown. Verify available fault current with utility. Contractor is responsible for size of equipment within footprint shown. Verify physical equipment size.

Provide branch circuit panel board, with equal or greater series AIC rating shown on E2.2a not rated less than 10,000 AIC, with bolt-on circuit breakers with the same AIC rating as the panel board. Square D type NQOD or equal by Cutler-Hammer, General Electric, Siemens or Westinghouse. Load centers are not permitted.

Panel shall be lockable and include "door-in-door" type construction.

See one-line for additional locking requirements.

Determine available fault current from serving electric utility at point of service. Calculate fault current at each panel-board throughout distribution system. Provide equipment with equal or greater series equipment AIC rating. Provide Flash label on switchboards and panelboard, control panels, meter sockets, and motor control centers, per NEC 110.16. Labels from panel equipment manufacturer, Seaton, or approved. Submit fault current from utility in writing clearly shown from utility (such as letter on utility letter-head). Fault currents shown are for reference only based on general conditions.

SECTION 16450 - Grounding

Grounding Electrodes to be installed per the NEC 250.50, 250.52 and 250.53 using any of the types listed as required (A)(1) thru (A)(7). Per the installation requirements in 250.53 if metal underground piping (i.e. copper water piping service) is used as the grounding electrode a supplemental electrode is required (see 250.53 (D)(2)) supplementing with an additional electrode specified in 250.52 (A)(2) thru (A)(7).

SECTION 16500 - Lighting

See Lighting Fixture Schedule and notes.

Circuit emergency and exit fixtures (E labeled) to emergency panel. Emergency lights and exit lights are to be switched per plans using Bodine GTD20A, NIN3E 24 or approved UL924 listed emergency lighting relay.

Emergency corridor lighting to be on continuously, unswitched.

Non emergency corridor lighting to be controlled by automatic lighting controller, located in the mechanical room.

Switch common area lighting where indicated with a maximum of 1440 watts per circuit.

SECTION 16520 - Time Switches

Corridor lights: 24 hour type, PCI LiteKeeper Series. Mount in mechanical room.

Exterior lights: 7-day astrological time control. PCI LiteKeeper Series. Provide photo sensor. Mount in mechanical room.

Include 12 keypad programming and LCD interface.

SECTION 16590 - Baseboard Heaters

Baseboard heaters shall be, size and voltage as shown, 250 watt per foot nominal densities, Q-MARK 2500 Series. Heater and thermostat shall be white in color. Control with wall mount line voltage remote thermostat, type TA1AW. Heater and thermostat shall be white in color. Heaters shown and connected by Electrical, but sized during design by Mechanical Engineer.

Wall Heaters-
Wall heaters shall be size and voltage as shown with integral thermostat, recessed type. Q-MARK AWH 4000 series. Heater shall be white in color.

Unit Heaters-
Unit heaters shall be size and voltage as shown. Q-MARK Type MUH. Control with wall-mount line voltage thermostat Type MT-1. Heater shall be white in color.

SECTION 16600 - EMERGENCY GENERATOR SYSTEM

Emergency Generator

Emergency generator shall be 120/208 volt, 3 Phase, 4 wire WYE Unit, 125 KW nominal output, natural gas fired standby engine/generator unit shall be complete with transfer switch, low oil, high temp, over speed, voltage controls and gauges, starting batteries, continuous charging hardware, output circuit protection, water jacket heater and weatherproof enclosure. Provide remote annunciator with back-up battery located in office. Unit shall be complete with all accessories as recommended by the manufacturer, and shall be furnished complete with manufacturers start-up service. All equipment and installation shall conform to article 445 on the NEC and NFPA 110. Generator shall be seismic certified.

Cummins, furnished by owner, installed, connected and tested by electrical contractor.

Natural gas consumption: 1,668 cu. ft./hr. (1000 BTU/cu. ft.)

Mount on concrete pad in location indicated on site plan. Circuit to transfer switch in mechanical room as shown by riser diagram. Coordinate with mechanical for separate natural gas supply from gas meter. Do not connect after (down stream) automatic shut-off valve. Provide sign at all main gas valves to indicate emergency generator operates from natural gas supply. Refer to details on drawing. Integral generator breakers shall be coordinated with distribution equipment. Breakers shall be by same manufacturer as the panels/switchboard to assure selective coordination. Provide breaker, include form C auxiliary contact.

Automatic Transfer Switches-
Amps as shown, 120/208 volt 3 pole plus solid neutral. Equipped with manual test button, engine starting contact mechanically held, automatic return to normal. Provide separate control conductors in separate 1" C from generator to ATS. Provide two pair, stranded shielded twisted pair cable 24 AWG, Belden 9729. Transfer switches shall be manufactured by, and the responsibility of, the generator manufacturer.

ATS shall include form C auxiliary contacts mounted on mechanically operated switch blade shaft of ATS.

Boxes and enclosures in the emergency system to be painted red and labeled with phenolic plastic sign saying Emergency so as to clearly identify components of system. Provide placard required by NEC 700-8(a).

SECTION 16700 - Low Voltage Installation

Low voltage equipment installation shall maintain fire ratings of wall. Equipment to be mounted on 2x4x2 listed boxes. The use of Mud Rings only, is not acceptable. Check with local codes on running low voltage wire directly into units smoke detectors (120 volt power). Run low voltage separate from 120v and at least 24" from service cables in corridors. Do not mount boxes back to back.

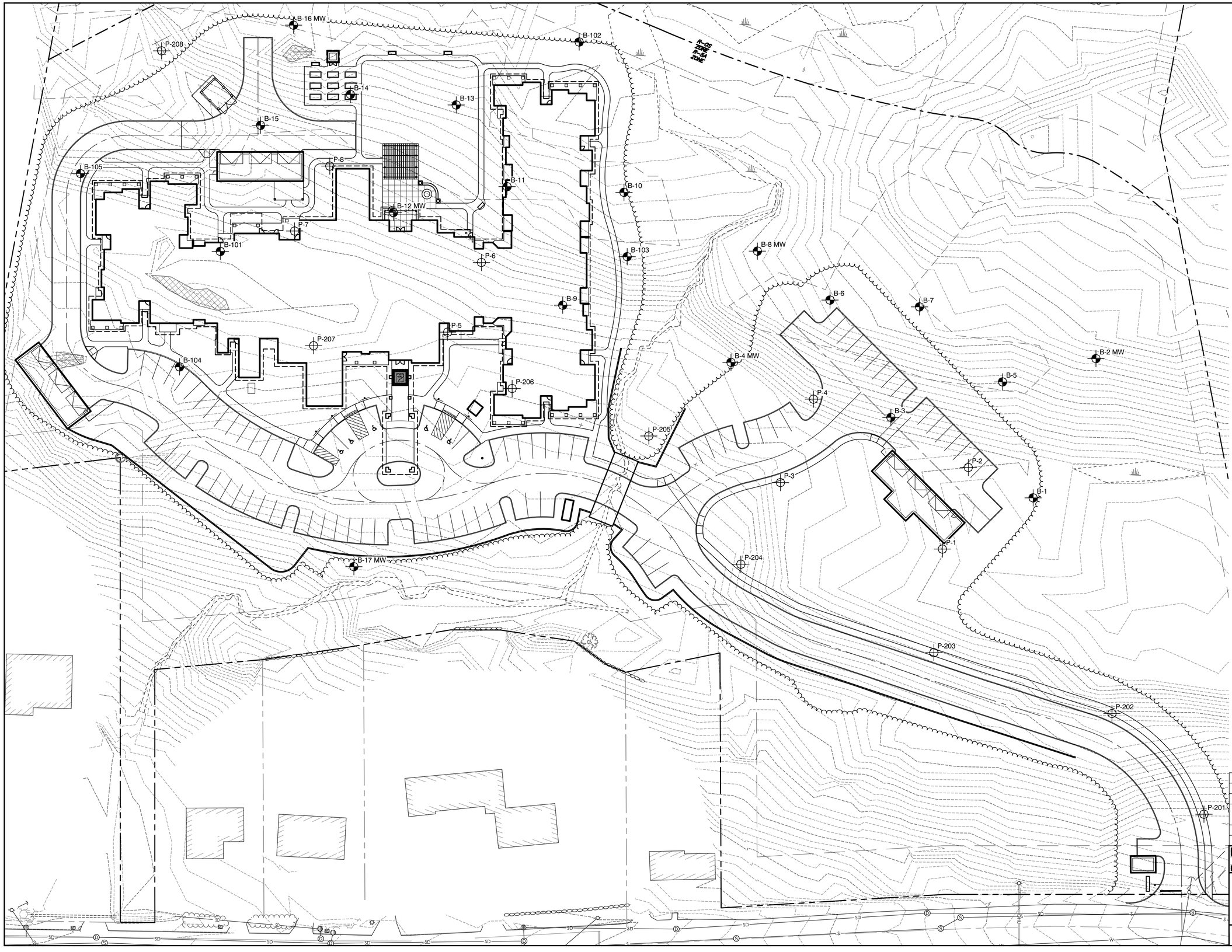
EMERGENCY POWER SYSTEM

Light fixtures with the "E" designation shall be wired to emergency panel. In the event of a power failure, the emergency generator will start and the automatic transfer shall provide emergency power to the emergency distribution system, and the emergency lights, including exit signs.

16500 - LIGHT FIXTURE SCHEDULE

DESIG.	DESCRIPTION	MANUFACTURER	LAMPS
A	2'x4' 2 TUBE FLUORESCENT TROFFER (SUSPENDED)	LITHONIA 2GTB-2-32-A12-120-GEB10IS	(2) FO28T8
A2	2'x4' 3 TUBE FLUORESCENT TROFFER (SUSPENDED)	LITHONIA 2GTB-3-32-A12-120-GEB10IS	(3) FO28T8
C	1'x4' 2 TUBE FLUORESCENT SURFACE MOUNT	LITHONIA M-2-32-A12-MVOLT-GEB10IS	(2) FO28T8
C3	15-1/2"x53-1/8" 2 TUBE FLUORESCENT SURFACE MOUNT (SURFACE MOUNTED) W/ SOLID WOOD FRAME	LITHONIA 11430-WH-32-120-GEB10IS	(2) FO28T8
C4	20-7/8"x53-1/8" 4 TUBE FLUORESCENT SURFACE MOUNT (SURFACE MOUNTED) W/ SOLID WOOD FRAME	LITHONIA 114-32-WH-32-120-GEB10IS	(4) FO28T8
C5	2'x4' 3 TUBE FLUORESCENT SURFACE MOUNT (SURFACE MOUNTED)	LITHONIA 2M-3-32-A12-MVOLT-1/3-GEB10IS	(3) FO28T8
D	STEP LIGHT - FLUORESCENT RECESSED WALL MOUNT. PROVIDE WHITE FACEPLATE INDOORS AND BLACK FACEPLATE OUTDOORS.	LITHONIA WSLIF 13DTTE FPL 120 (FPSBL)	(1) 13w DTT
D1	LED UNDER CABINET LINEAR DISPLAY LIGHT. 13-1/2" LONG. HARDWIRE INSTALLATION. WARM WHITE LED. PROVIDE REQUIRED TRANSFORMER, ACCESSORIES, WIREWAYS, CONNECTORS, AND MOUNTING TRACK FOR COMPLETE INSTALL.	AMERICAN LIGHTING LCL-12-3000K WITH (LED-DR60-24) DRIVER	LED
D2	STEP LIGHT - INCANDESCENT RECESSED WALL MOUNT	HYDREL 4453-A-40I-120-LLV-BL	(1) 40W T10
F1	7 WATT, LED LANDSCAPE LIGHT. BLACK FINISH. UL LISTED WET LOCATION. 120 VOLT. 600 LUMEN OUTPUT. 4100K COLOR TEMP.	E-CONOLIGHT E-GL3L01N2K	LED 7 WATT 600 LUMENS
F2	38 WATT, LED LANDSCAPE LIGHT. BLACK FINISH. UL LISTED WET LOCATION. SPOT DISTRIBUTION. 120 VOLT. 2000 LUMEN OUTPUT. 4100K COLOR TEMP.	E-CONOLIGHT E-GL1S03N2K	LED 38 WATT 2000 LUMENS
F3	38 WATT, LED LANDSCAPE LIGHT. BLACK FINISH. UL LISTED WET LOCATION. FLOOD DISTRIBUTION. 120 VOLT. 2000 LUMEN OUTPUT. 4100K COLOR TEMP.	E-CONOLIGHT E-GL1F03N2K	LED 38 WATT 2000 LUMENS
G	WALL MOUNT LED DOWNLIGHT. FULL CUTOFF. 9.5"DX8.75"WX4.5"H. DARK BRONZE FINISH. 3,350 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-WP6L03NZ	LED 36 WATTS 3,300 LUMENS
G1	WALL MOUNT LED DOWNLIGHT. FULL CUTOFF. 6-3/16"LX4-7/8"WX5-3/16"H. BLACK FINISH. 950 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-S12L014UK	LED 16 WATTS 950 LUMENS
G2	WALL MOUNT LED DOWNLIGHT. FULL CUTOFF. 9.5"DX5.75"WX4"H. DARK BRONZE FINISH. 1,200 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-WW1L21N2P	LED 20 WATTS 1,200 LUMENS
G3	WALL MOUNT LED UP/DOWN LIGHT. 6-3/16"LX4-7/8"WX7-3/16"H. BLACK FINISH. 1850 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-S22L034UK	LED 30 WATTS 1,850 LUMENS
G4	WALL MOUNT LED GOOSENECK WITH STARLIGHT SHROUD. 31-1/2"LX15-1/4"WX25-3/4"H. BLACK FINISH. 1260 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. 120 VOLT.	E-CONOLIGHT E-DG1L13JUSK	LED 15 WATTS 1,260 LUMENS
G5	PARKING LOT WALL MOUNT DOWNLIGHT CUT-OFF WITH FORWARD THROW REFLECTOR.	LITHONIA WST-150M-FT-120-SCWA-DDBT	(1) 150W MH
HL	SUITE BATH - HEAT LAMP AND LIGHT (RECESSED MOUNT). SEE DETAIL 6/E2.2b FOR FIXTURE INSTALLED IN RATED CEILING.	BROAN MODEL 163	(1) 14 WATT BR30 CFL, 4100°K W/MED. BASE (1) 250 WATT BR40 INFRARED HEAT LAMP
J	2-1/8"x48" 1 TUBE FLUORESCENT STRIP	LITHONIA Z-1-32-MVOLT-GEB10IS	(1) FO28T8
J1	4-3/8"x48" 2 TUBE FLUORESCENT STRIP CHANNEL	LITHONIA C-2-32-MVOLT-GEB10IS	(2) FO28T8
J3	4"x24-3/8"X1-3/8" 1 TUBE FLUORESCENT UNDER CABINET LIGHT WITH SWITCH.	LITHONIA UCB-17-120-SWR	(1) 17W T8
J4	4"x48-3/8"x1-3/8" 1 LAMP FLUORESCENT UNDER CABINET LIGHT WITH SWITCH.	LITHONIA UCB-120-SWR	(1) FO28T8
K	CHANDELIER OWNER SUPPLIED, PROVIDE J-BOX, WIRE, SWITCHING AND INSTALLATION.		300 WATTS MAX.
K1	CHANDELIER 23"W, 24"H. BRUSHED NICKEL FINISH. ETCHED OPAL GLASS.	PROGRESS P4082-09	USE (3) 23 WATT 4100°K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.
K2	INCANDESCENT BOWL PENDANT FIXTURE. BRUSHED NICKEL FINISH.	PROGRESS P3608-81	USE (3) 13 WATT 4100°K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.
K3	INCANDESCENT CHANDELIER. 36" DIA, 14" HIGH BOWL, 31" OVERALL HEIGHT. OLDE BRONZE FINISH WITH SATIN ETCHED LENS. PROVIDE SWIVEL CANOPY WHERE INSTALLED AT VAULTED CEILING.	KICHLER 32790OZW	USE (5) 23 WATT 4100°K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.
K4	INCANDESCENT SEMI-FLUSH 24" DIA, 12" HIGH BOWL, OLDE BRONZE FINISH WITH SATIN ETCHED LENS. PROVIDE SWIVEL CANOPY WHERE INSTALLED AT VAULTED CEILING.	KICHLER 36060OZW	USE (3) 23 WATT 4100°K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.
L1	6-1/4" WIDTH 50-5/8" LENGTH 2-1/4" DEPTH FLUORESCENT SLIM LINE WRAP WITH WHITE ACRYLIC DIFFUSER. 120v NPF ELECTRONIC BALLAST.	PROGRESS P7189-30STR (PROVIDE INSTANT START BALLAST)	(2) FO28T8
M	SQUARE 12" HID RECESSED CANOPY LIGHT	RUUD LIGHTING MRC0615-1	(1) 150w MH
N	8" RECESSED HID DOWNLIGHT WITH REGRESSED FRESNEL LENS	GOTHAM LGH-50M-8RW-FFL-120	(1) 50w MH
N1	8" RECESSED HID DOWNLIGHT WITH REGRESSED FRESNEL LENS WITH QUARTZ RESTRIKE SYSTEM	GOTHAM LGH-50M-8RW-FFL-120-QRS	(1) 50w MH (1) 75W QUARTZ RESTRIKE
O	18"~ INCANDESCENT PENDENT FIXTURE, CHAIN HUNG.	PROGRESS P5095-09	USE (1) 13 WATT 4100°K CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.
O1	6-1/2"~ INCANDESCENT PENDANT FIXTURE.	PROGRESS P5108-09 MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (1) 13 WATT 4100°K CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.
O2	4-3/4"~ FLUORESCENT PENDANT FIXTURE. BRONZE FINISH WITH TOPAZ TORTOISE ART GLASS.	PROGRESS P5150-20EBWB	(1) 13 WATT CFL.
P	VAPOR TIGHT	(FURNISHED W/ COOLER)	
Q	19" DIAMETER SEMI-FLUSH DIRECT CEILING MOUNTED FIXTURE. BRUSHED NICKEL FINISH WITH INVERTED SATIN WHITE GLASS BOWL.	PROGRESS P3569-09 MED. BASE LAMPHOLDER - MAX. 300 WATTS	USE (3) 23 WATT 4100°K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.
Q1	DECK/PATIO-10" CEILING-MOUNTED WHITE GLASS & FINISH, UL LISTED WET LOCATION. FROSTED RIBBED GLASS.	VOLUME LIGHTING V6870-6 MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (1) 13 WATT 4100°K CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.
Q2	SUITE AREAS - 14"~ CEILING MOUNTED, BRUSHED NICKEL HOUSING, WITH ETCHED RIBBED GLASS.	PROGRESS P3689-09 MED. BASE LAMPHOLDER - MAX. 120 WATTS	USE (2) 13 WATT 4100°K CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.
Q3	19"~ SEMI-FLUSH DIRECT CEILING MOUNTED FIXTURE. ANTIQUE BRONZE FINISH WITH INVERTED SATIN WHITE GLASS BOWL.	PROGRESS P3484-09 MED. BASE LAMPHOLDER - MAX. 300 WATTS	USE (3) 23 WATT 4100°K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.
S	SUITE BATH - WALL-MOUNT THREE-LIGHT FIXTURE, BRUSHED NICKEL FINISH.	PROGRESS P3303-09 MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (3) 13 WATT 4100°K CFL. W/MED. BASE ITEM #4T213 T.C.P., INC.
S1	FLUORESCENT WALL SCONCE. 16"H x 8"W x 4"D. BRUSHED NICKEL FINISH. ETCHED OPAL GLASS. ELECTRONIC BALLAST.	MINKA LAVERY 347-84-PL	(2) 13w G24 LAMPS
S2	FLUORESCENT WALL SCONCEONE-LIGHT ADA WALL SCONCE WITH LIGHT SATIN AMBER GLASS AND ANTIQUE BRONZE FINISH.	PROGRESS P7081-20	(1) 13W DIMMABLE GU-24 LAMP
T1	PARKING LOT - LED SHOEBOX WITH TYPE III MEDIUM DISTRIBUTION WITH 18' POLE (SEE SITE PLAN FOR LOCATION) (SEE DETAIL #1/E2.2). WITH POLE MOUNTED RECEPTACLE. DARK BRONZE FINISH. 9,800 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. 120 VOLT.	LITHONIA DSX0 LED 40C-700-40K-T3M-MVOLT-SPA-DDBXD POLE: SSS-18-4C-DM19-FGL5A	LED 91 WATTS 9,800 LUMENS
T1H	SAME AS T1 EXCEPT WITH HOUSE SIDE SHIELD.	LITHONIA DSX0 LED 40C-700-40K-T3M-MVOLT-SPA-HS-DDBXD POLE: SSS-18-4C-DM19-FGL5A	LED 91 WATTS 9,800 LUMENS
T2	SAME AS T1 EXCEPT WITH TYPE 4 MEDIUM DISTRIBUTION.	LITHONIA DSX0 LED 40C-700-40K-T4M-MVOLT-SPA-DDBXD POLE: SSS-18-4C-DM19-FGL5A	LED 91 WATTS 9,800 LUMENS
T2H	SAME AS T2 EXCEPT WITH HOUSE SIDE SHIELD.	LITHONIA DSX0 LED 40C-700-40K-T4M-MVOLT-SPA-HS-DDBXD POLE: SSS-18-4C-DM19-FGL5A	LED 91 WATTS 9,800 LUMENS
T3	PARKING LOT - LED SHOEBOX WITH TYPE III MEDIUM DISTRIBUTION WITH 12' POLE (SEE SITE PLAN FOR LOCATION) (SEE DETAIL #1/E2.2). WITH POLE MOUNTED RECEPTACLE. DARK BRONZE FINISH. 7,700 LUMENS, 4,000 KELVIN COLOR TEMPERATURE. WITH HOUSE SIDE SHIELD. 120 VOLT.	LITHONIA DSX0 LED 40C-530-40K-T3M-MVOLT-SPA-HS-DDBXD POLE: SSS-12-4C-DM19-FGL5A	LED 68 WATTS 7,700 LUMENS
U	6" INCANDESCENT WALLWASH DOWNLIGHT. WITH NARROW FLANGE WHITE TRIM AND OPEN CLEAR DIFFUSE REFLECTOR.	LITHONIA 6VI-6WSA-TRW MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (1) 23 WATT 4100°K CFL. W/MED. BASE ITEM #4T223 T.C.P., INC.
U1	6" FLUORESCENT DOWNLIGHT. WITH NARROW FLANGE WHITE TRIM AND OPEN CLEAR DIFFUSE REFLECTOR. ELECTRONIC BALLAST.	LITHONIA 6VF-26-42TRT-609A-MVOLT-TRW	(1) 32W TRT
U2	8" COMPACT FLUORESCENT DOWNLIGHT FOR FLAT AND SLOPED CEILING. OPEN CLEAR DIFFUSE REFLECTOR.	LITHONIA 8HF-2/32TRT-F803A-120-TRW (PROVIDE "SCA8" TRIM IN SLOPED CEILING AREAS)	(2) 32W TRT
U3	6" INCANDESCENT DOWNLIGHT. WITH NARROW FLANGE WHITE TRIM AND OPEN CLEAR DIFFUSE REFLECTOR.	LITHONIA 6VI-609A-TRW MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (1) 23 WATT PAR38 CFL, 4100°K W/MED. BASE ITEM #1P3823 T.C.P., INC.
U4	8" COMPACT FLUORESCENT DOWNLIGHT FOR SLOPED CEILINGS. OPEN CLEAR DIFFUSE REFLECTOR. 120 VOLT. WITH 20° SLOPED CEILING ADAPTER.	LITHONIA 8HF-2/26-42TRT-F803A-MVOLT-SCA8-20D	(2) 42W TRT
U5	8" RECESSED LENSED METAL HALIDE DOWNLIGHT. ALUMINUM ANODIZED CLEAR DIFFUSE REFLECTOR WITH CLEAR GLASS LENS. WHITE TRIM RING. STEEL MOUNTING FRAME WITH MECHANICAL TRIM RETENTION CLIPS. WITH QUARTZ-RESTRIKE SYSTEM. 120 VOLT.	LITHONIA LDN8-100M-802A-CGL-120/277-QRS	(1) 100W MH (1) 100W QUARTZ RESTRIKE
U6	3" INCANDESCENT DOWNLIGHT. SHALLOW CEILING, 120V LINE VOLTAGE. WITH OPEN NARROW FLANGE OIL-RUBBED BRONZE REFLECTOR/TRIM.	LITHONIA L3 TRIM: 301ORB	(1) 50W PAR20 LAMP
U7	SAME AS "U6" EXCEPT PROVIDE CLEAR DIFFUSE REFLECTOR/TRIM.	LITHONIA L3 TRIM: 301A	(1) 50 WATT R20 LAMP
U8	SAME AS "U3" EXCEPT PROVIDE PEWTER REFLECTOR/TRIM.	LITHONIA 6VI-609PR	USE (1) 23 WATT PAR38 CFL, 4100°K W/MED.
U9	SAME AS "U" EXCEPT PROVIDE PEWTER REFLECTOR/TRIM.	LITHONIA 6VI-6WSPR	USE (1) 23 WATT 4100°K CFL. W/MED. BASE
U10	SAME AS "U3" EXCEPT PROVIDE WET LOCATION REFLECTOR/TRIM WITH WHITE SPLAY FRESNEL LENS.	LITHONIA 6VI-6LR4 MED. BASE LAMPHOLDER - MAX. 100 WATTS	USE (1) 23 WATT 4100°K CFL. W/MED. BASE IT

Plan 18



LEGEND:

- APPROXIMATE BORING LOCATION
- APPROXIMATE PROBE LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALE PLAN OF THE SITE PREPARED BY SEBAGO TECHNICS, RECEIVED VIA E-MAIL SEPTEMBER 16, 2015 IN AUTOCAD DWG FILE FORMAT.
2. BORINGS B-101 THROUGH B-105 AND PROBES P-201 THROUGH P-207 WERE LOCATED IN THE FIELD BY SURVEY BY SEBAGO TECHNICS AND PROVIDED ON THE ABOVE REFERENCED PLAN. PROBE P-208 WAS LOCATED IN THE FIELD BY GPS SURVEY BY S. W. COLE ENGINEERING, INC. USING A MAPPING GRADE TRIMBLE GPS RECEIVER AND EXISTING SITE FEATURES TO ESTABLISH CONTROL.
3. BORINGS B-1 THROUGH B-16 AND PROBES P-1 THROUGH P-8 WERE PERFORMED BY S. W. COLE ENGINEERING, INC. IN DECEMBER 2004 AND LOCATED ON A 1"=50' SCALE PLAN OF THE SITE ENTITLED "PRE-DEVELOPMENT DRAINAGE PLAN," PREPARED BY BH2M, INC., DATED DECEMBER 2004.
4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
5. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 30 60 Feet

NO.	DATE	DESCRIPTION	BY
1	09/17/2015	REVISED BASE PLAN, REVISE LOCATIONS OF B-101 - B-105 AND P-201 - P-207 PER SURVEY DATA	CEM
0	12/05/2014	REPORT SUBMISSION	CEM

S.W.COLE ENGINEERING, INC.

HAWTHORN DEVELOPMENT, LLC

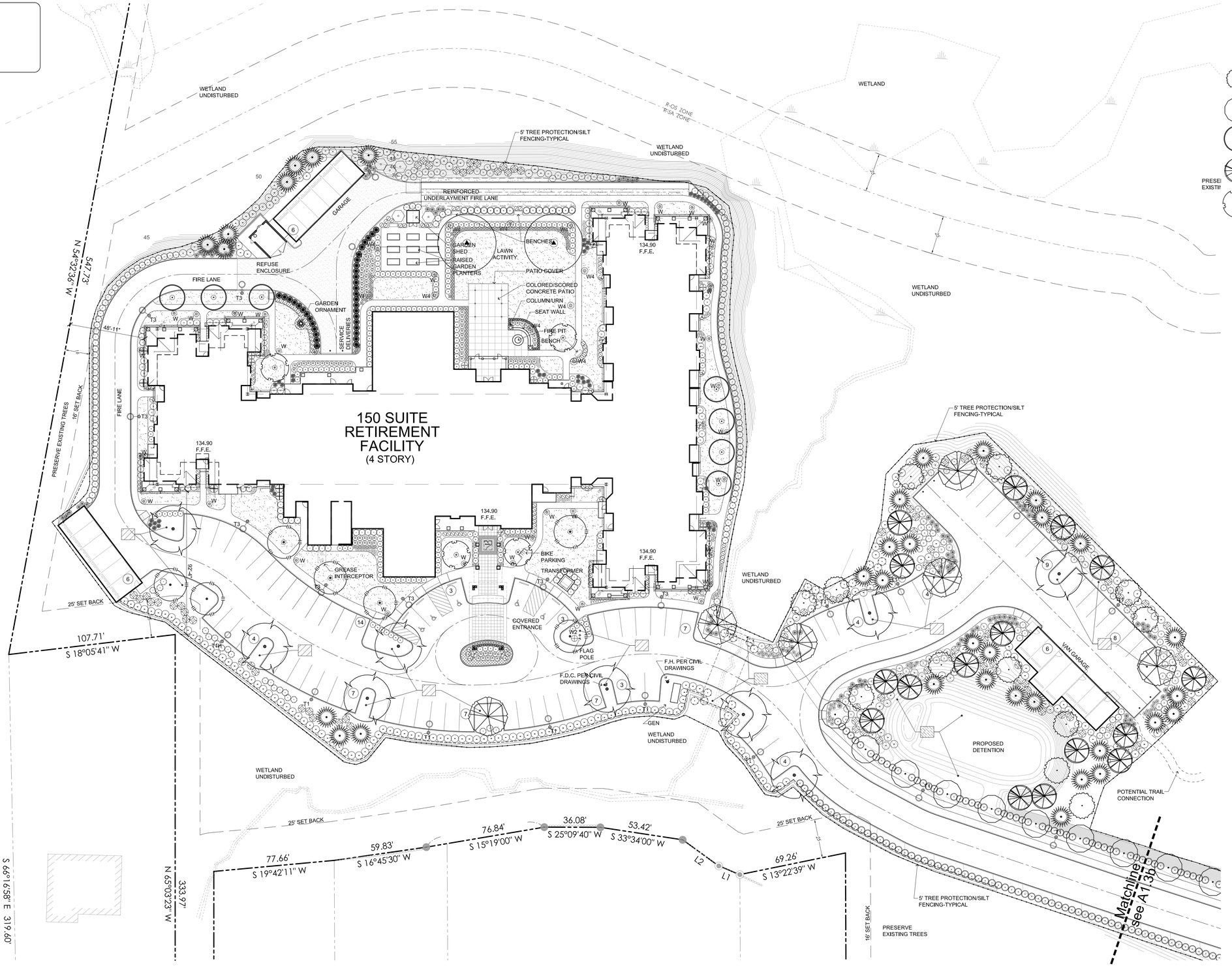
EXPLORATION LOCATION PLAN

PROPOSED RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, MAINE

Job No.: 14-1188 Scale: 1" = 40'
Date : 12/05/2014 Sheet: 1

R:\2014\14-1188\CAD\Drawings\14-1188 Sheet1 EEP_Rev1.dwg, 9/17/2015 9:20:00 AM, 1:1, CEM, S. W. Cole Engineering, Inc.

Plan 19



Planting Legend

Symbol	Botanical Name / Common Name	Quantity	Size / Comments
	Trees: (some symbols reduced in scale in Legend)		
	Acer saccharum 'Green Mountain' Sugar Maple (native)	2	2.50" caliper B&B Standard
	Amelanchier canadensis Shadblow Serviceberry (native)	12	1.75" caliper B&B Standard
	Quercus prinus Chestnut Oak (native)	9	2.50" caliper B&B Standard
	Glnkgo biloba 'Princeton Sentry' Princeton Sentry Maidenhair Tree	16	2.50" caliper B&B Standard
	Juniperus virginiana Eastern Red Cedar (native)	34	5-6 ft. B&B Low-branched
	Malus 'Spring Snow' Flowering Crabapple	7	1.75" caliper B&B Standard
	Nyssa sylvatica Tupelo (native)	6	2.50" caliper B&B Standard
	Plcea glauca Whlte Spruce (native)	16	6-7 ft. B&B Low-branched
	Prunus sargentii 'Columnaris' Columnar Sargent Flowering Cherry	7	1.75" caliper B&B Standard
	Syringa reticulata 'Ivory Silk' Japanese Tree Lilac	4	1.75" caliper B&B Standard
	Thuja occidentalis 'Emerald' American Arborvitae (native)	35	5-6 ft. B&B Full to ground-matching
	Shrubs/Vines:		
	Ables balsamea 'Nana' Dwarf Balsam Fir (native)	15	3 gal. container 18" min. height
	Aronia arbutifolia 'Brilliantissima' Red Chokeberry (native)	92	5 gal. container 24" min. height
	Buxus koreana x sempervirens 'Green Mountain' Green Mountain Boxwood	46	18-21" B&B
	Clethra alnifolia 'Hummingbird' Summersweet (native)	102	3 gal. container 18" min. height
	Cornus sericea baileyi Redtwig Dogwood (native)	19	3 gal. container 24" min. height
	Gaultheria procumbens Wintergreen (native)	52	3 gal. container 12" min. height
	Hydrangea arborescens 'Annabelle' Annabelle Hydrangea	6	5 gal. container 24" min height
	Ilex glabra 'Compacta' Compact Inkberry (native)	229	3 gal. container 24" min. height
	Ilex verticillata 'Red Sprite' Winterberry (native)	127	3 gal. container 24" min. height
	Juniperus chinensis 'Old Gold' Old Gold Juniper	228	5 gal. container 24" min. height
	Myrica pennsylvanica Northern Bayberry (native)	238	5 gal. container 24" min. height
	Plcea glauca albertiana 'Conica' Dwarf White Spruce (native)	8	36" B&B Full & Symmetrical
	Rosa 'Radrazz' Red Knock-out Rose	89	3 gal. container 18" min. height
	Syringa patula 'Miss Kim' Miss Kim Lilac	5	5 gal. container 24" min. height
	Vaccinium corymbosum Highbush Blueberry (native)	5	5 gal. container 24" min. height
	Weigela 'Wine and Roses' Hybrid Weigela	198	5 gal. container 24" min. height
	Grasses / Perennials:		
	Asclepias tuberosa Butterfly Weed (native)	35	1 gal. container
	Coreopsis verticillata 'Zagreb' Coreopsis	105	1 gal. container
	Hemerocallis flava Lemon Daylily	42	1 gal. container
	Heuchera 'Plum Pudding' Alum Root	77	1 gal. container
	Comptonia pergrina Sweet Fern (native)	127	1 gal. container
	Pennisetum alopecuroides 'Hameln' Hameln Fountain Grass	112	1 gal. container
	Ground Covers:		
	Arctostaphylos uva-ursi 'Massachusetts' Bearberry (native)		Liners @ 36" o.c. triangularly spaced
	Native Wetland/Buffer Seed Mix Pierson Nurseries Inc. or equal		Hydroseed all disturbed areas
	Annual Flowers by season Spring-Summer-Fall rotations		4" Pots@ 8" o.c. triangularly spaced
	Lawn Areas- Kentucky Bluegrass/ Fescue mix		Sod or Seed areas to be determined

Notes-

1. An automated permanent irrigation system shall be installed using SMART Technology, providing 100% coverage to all landscaped areas.
2. Provide 5 ft. high Tree Protection fencing around driplines of all trees or tree groups to be preserved prior to commencement of construction. Tree Protection fencing shall remain in place throughout entire construction activity period. Refer to Sheet A1.3b for General Notes and Tree Protection Detail and Notes.
3. All shrub/ground cover beds to receive a 3" layer of organic mulch.

PLANTING PLAN

DATE: 5 August 2015 rev. 8-12-15
SCALE: 1" = 30' rev. 11-19-15

0 15 30 60 90

LICENSED LANDSCAPE ARCHITECT
BRIAN D. LIND
No. 4193
STATE OF MAINE

lenity architecture
3150 Kettle Court SE, Salem, Oregon 97301
P 503 399 0065 W lenityarchitecture.com
P 503 399 1090

COLSON AND COLSON
GENERAL CONTRACTOR, INC.
2260 McGILCHRIST STREET SE, SUITE 200
SALEM, OREGON, 97302
PHONE (503) 586-7401

PORTLAND
RETIREMENT RESIDENCE
802 OCEAN AVE. PORTLAND, MAINE 04103

PLANTING PLAN

DATE
8/28/2015

REVISED DATE
9/22/2015

SHEET
A1.3a

©2015 Lenity Architecture

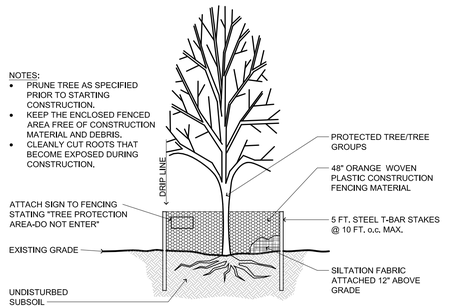
saved:11/19/2015 3:34 PM inked: plot:11/20/2015 8:27 AM I:\lenity\Clients\Colson\Portland\Sheet\Set\A1.3 planting plan.dwg A1.3a

GENERAL NOTES

1. All local, municipal, state, and federal laws regarding uses, regulations, governing or relating to any portion of the work depicted on these plans, are hereby incorporated into and made part of these specifications, and their provisions shall be carried out by the Contractor. The Contractor shall, at all times protect the public throughout the construction process.
2. The Landscape Contractor shall carefully correlate construction activities with that of the Earthwork Contractor and other site development.
3. The Contractor shall verify drawing dimensions with actual field conditions and inspect related work and adjacent surfaces. The Contractor shall verify the accuracy of all finish grades within the work area. The Contractor shall report to the Landscape Architect and Owner all conditions which prevent proper execution of this work.
4. The exact location of all existing utilities, structures and underground utilities, which may not be indicated on the drawings, shall be determined by the Contractor. The Contractor shall protect existing structures and utility services and is responsible for their replacement if damaged.
5. Disturbance and impacts to existing native trees and shrubs shall be minimized to the greatest extent practicable.
6. The Contractor shall keep the premises free from rubbish and debris at all times and shall arrange material storage so as not to interfere with the operation of the project. All unused materials, rubbish and debris shall be removed from the site.
7. All plant material and planting supplies shall be warranted for a period of not less than one year from the completion date of installation. All replacement stock shall be subject to the same warranty requirements as the original stock. Any damage due to replacement operations shall be repaired by the Landscape Contractor. At the end of the warranty period, inspections shall be made jointly by Landscape Architect, Owner and Landscape Contractor. All plant and lawn areas not in a healthy growing condition shall be removed and replaced with plants and turf cover of a like kind and size before the close of the next planting season.
8. No staging activities will occur within the tree protection areas.

EXISTING TREE PROTECTION

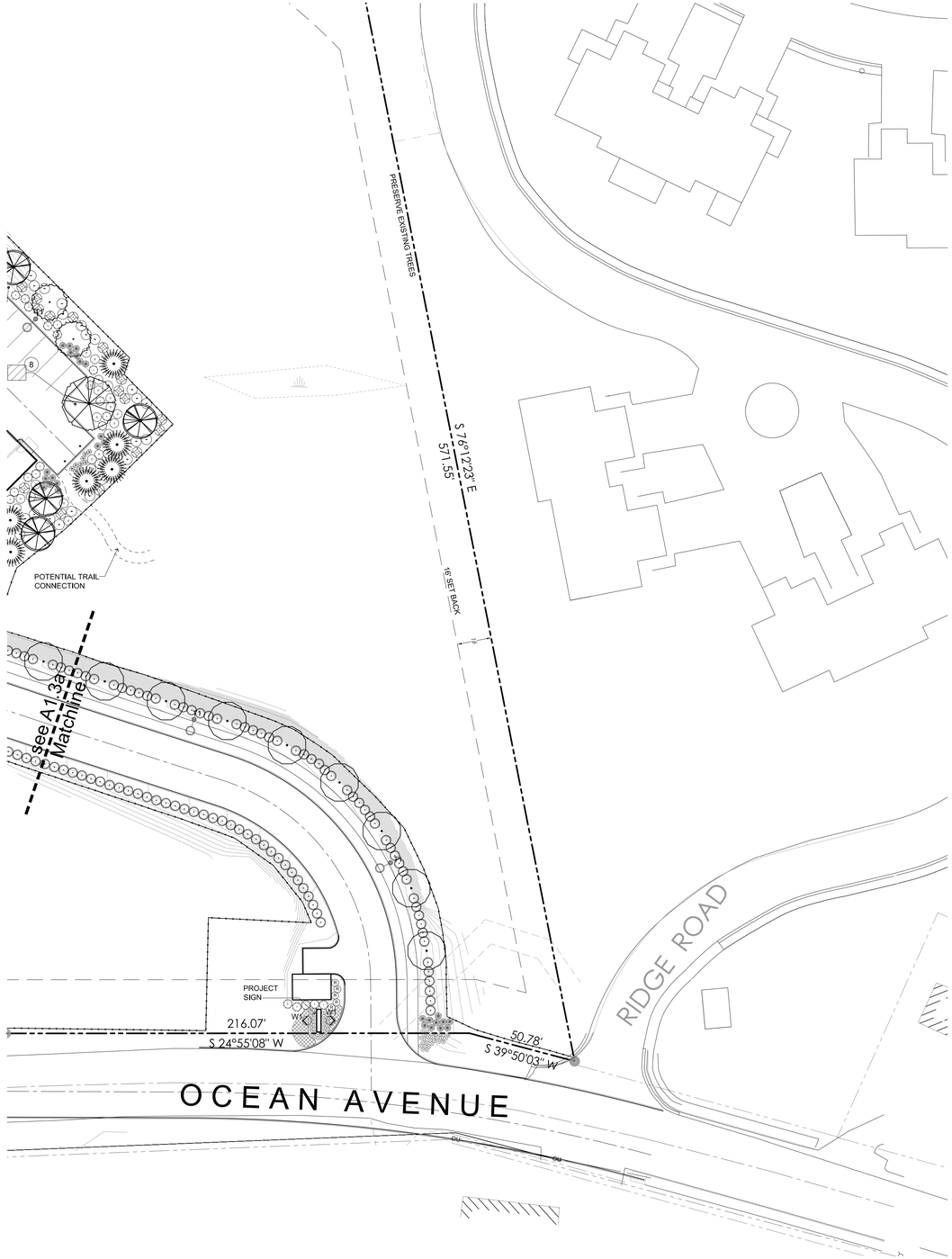
1. Provide temporary fencing, barricades, and guards as necessary or required to protect trees which are to remain from damage above and below grade, prior to the commencement of construction. Clearly designate tree protection zone to be clear of any personnel or vehicular movement.
   A. Trees identified for retention shall be marked with yellow flagging tape and protected by barrier fencing placed no less than 5 horizontal feet from the outside edge of the trunk in all directions or beneath the tree dripline, whichever is greater. Clusters of trees may be protected by continuous fencing following the same guidelines.
   B. No construction activity shall occur within the tree protection zone, including, but not limited to, dumping or storage of materials such as building supplies, soil waste items, equipment, or parked vehicles.
2. Protect root systems of trees to remain from flooding, erosion, or excessive wetting resulting from dewatering operations and compaction. Do not store construction materials or permit vehicles to drive or park within the dripline area of any tree to remain. Protect all plant growth, including root systems of trees, from the dumping of refuse or chemically injurious material or liquids, and continual puddling of running water. Protect against unauthorized cutting, breaking, or skinning of roots and branches, skinning, and bruising of bark. Do not allow fires on site.
3. Maintain protection features throughout the construction process. Immediately repair any alteration to protection measures by construction process. Affect alterations to protection measures immediately upon direction of Owner's Representative. Monitor maintenance measures daily.
4. Do not prune without explicit approval of the City Forester. Where pruning of existing trees is necessary, review conditions with the City Forester before proceeding, and comply with his/her directives. All tree pruning or root cutting to be performed with sharp pruning instruments; do not break or chop. Limbs and/or roots greater than 2" in diameter shall be cut only under the direction of a State-certified arborist.
5. Do not change the existing grade beneath dripline of trees to remain.



1 TREE PRESERVATION FENCING

SCALE: NOT TO SCALE

TI:02SITEWK/220EXCAV/02220025



Planting Legend

Symbol	Botanical Name / Common Name	Quantity	Size / Comments
	Trees: (some symbols reduced in scale in Legend)		
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	Annual Flowers by season Spring-Summer-Fall rotations		4" Pots@ 8" o.c. triangularly spaced
	Lawn Areas- Kentucky Bluegrass/ Fescue mix		Sod or Seed areas to be determined

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PLANTING PLAN

DATE: 5 August 2015 rev. 8-12-15
SCALE: 1" = 30' rev. 11-19-15

0 15 30 60 90

LICENSED LANDSCAPE ARCHITECT
BRIAN D. LIND No. 4193
STATE OF MAINE

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2260 McGILCHRIST STREET SE, SUITE 200
SALEM, OREGON, 97302
PHONE (503) 586-7401

PORTLAND
RETIREMENT RESIDENCE
802 OCEAN AVE. PORTLAND, MAINE 04103

PLANTING PLAN

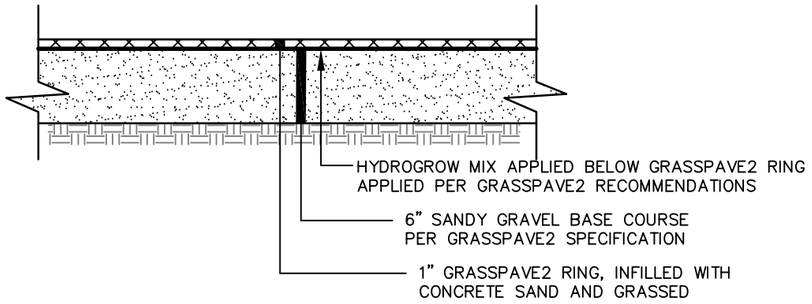
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DATE
8/28/2015

REVISED DATE
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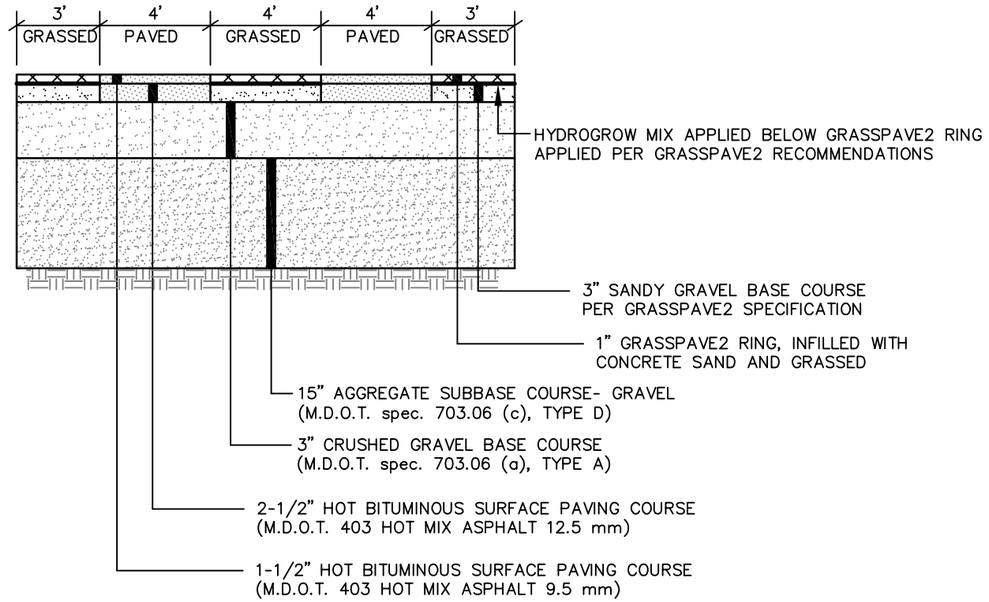


NOTES:

1. COMPACT SANDY GRAVEL BASE COURSE TO 95% OF MAXIMUM DENSITY USING APPROPRIATE COMPACTION METHODS.

4 STABILIZED TURF SECTION

NOT TO SCALE



NOTES:

1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. COMPACT SANDY GRAVEL BASE COURSE TO 95% OF MAXIMUM DENSITY USING APPROPRIATE COMPACTION METHODS.

4 STABILIZED EMERGENCY ACCESS SECTION

NOT TO SCALE

2- 4' SIDEWALKS BUILT TO ROAD STANDARDS (i.e. PAVEMENT, BASE & SUBBASE) GREEN SHADED AREA TO BE GEOWEB OR GRASSPAVE SYSTEM ON TOP OF ROAD BASE & SUBBASE

GREEN SHADED LAWN AREA TO BE GEOWEB OR GRASSPAVE SYSTEM ON MANUFACTURER'S RECOMMENDED SUBSURFACE LAYERS

RECONFIGURED PAVEMENT/ TURNAROUND AREA

ALL WETLAND AREAS TO BE UNDISTURBED

EDGE OF PAVEMENT RIDGE ROAD, SEE PLAN REFERENCE 6C

ITEM 13 SCHEDULE B – SECTION II EXCEPTIONS 25281/148

CONTRACT ZONE LINE AS DEPICTED ON PLANS PREVIOUSLY PREPARED FOR THIS PROPERTY BY BHDM FOR DIANE DOYLE SEE 21999/113 AND 23147/127

150 SUITE RETIREMENT FACILITY (4 STORY)

OCEAN AVENUE
(PUBLIC RIGHT-OF-WAY) - STATE ROUTE 9

RIDGE ROAD

ASHLEY LANE

BRIARWOOD

SEASONAL RUN

BENCHMARK
VERT. SPK. ROOT
24" WHITE PINE
ELEVATION: 122.43'

BENCHMARK
EXISTING DRILL
HOLE IN LEDGE
ELEVATION: 104.83'

BENCHMARK
RR SPIKE IN POLE
ELEVATION: 111.34'

BENCHMARK
RR SPIKE IN POLE

N/F
TERENCE B. & BARBARA R. GOODWIN, TRUSTEES
29004/118
MAP 416 BLOCK A LOT 001

N/F
JACOB PAUL STAUB
&
SONIA MARYA BARANTES
29398/231
MAP 416 BLOCK A LOT 002

N/F
WILLIAM H., JR., & LINDA R. CARR
19145/114
MAP 416 BLOCK A LOT 013

N/F
HEATHER A. LEBEL
24446/12
MAP 416 BLOCK A LOT 014

N/F
TAI XUAN HUYNH
&
TRUC MI TH NGUYEN
28600/63
MAP 416 BLOCK A LOT 008

N/F
RICHARD M. & MARY H. PERKINS
26172/243
MAP 416 BLOCK A LOT 004

N/F
SHIRLEY A. & TIMOTHY W. CAIAZZO
4550/113
MAP 416 BLOCK A LOT 005

N/F
BOUMAN REALTY, LLC
28510/73
MAP 416 BLOCK A LOT 003

CENTRAL MAINE POWER COMPANY EASEMENT
SECTION 186
21/250
SEE SCHEDULE B - SECTION II EXCEPTIONS

WETLAND

WETLAND UNDISTURBED

PRESERVE EXISTING TREES

PROPOSED DETENTION

MATCH LINE

CMP 66

CMP 67

CMP/100

CMP/100/BELL ATL 30/457

S 69°15'58" E 319.40'

N 69°03'37" W 319.37'

S 69°03'46" E 318.79'

N 69°19'11" W 168.15'

S 76°11'23" E 571.55'

S 25°50'13" W 100.03'

S 25°34'21" W 24.82'

107.71'
S 18°05'41" W

59.83'
S 16°45'30" W

77.66'
S 19°42'11" W

76.84'
S 15°19'00" W

36.08'
S 25°09'40" W

53.42'
S 33°34'00" W

69.26'
S 13°22'39" W

160.65'
S 21°29'19" W

216.07'
S 24°55'08" W

50.78'
S 35°50'03" W

L1

L2

20' SET BACK

25' SET BACK

15' SET BACK

30' SET BACK

FIRE LANE

ENCLOSURE

RAISED GARDEN PLANTERS

LAWN ACTIVITY

PATIO COVER

BENCHES

COLUMN/URN

SEAT WALL

FIRE PIT BENCH

COVERED ENTRANCE

FLAG POLE

TRANSFORMER

GREASE INTERCEPTOR

MECH.

ELEC.

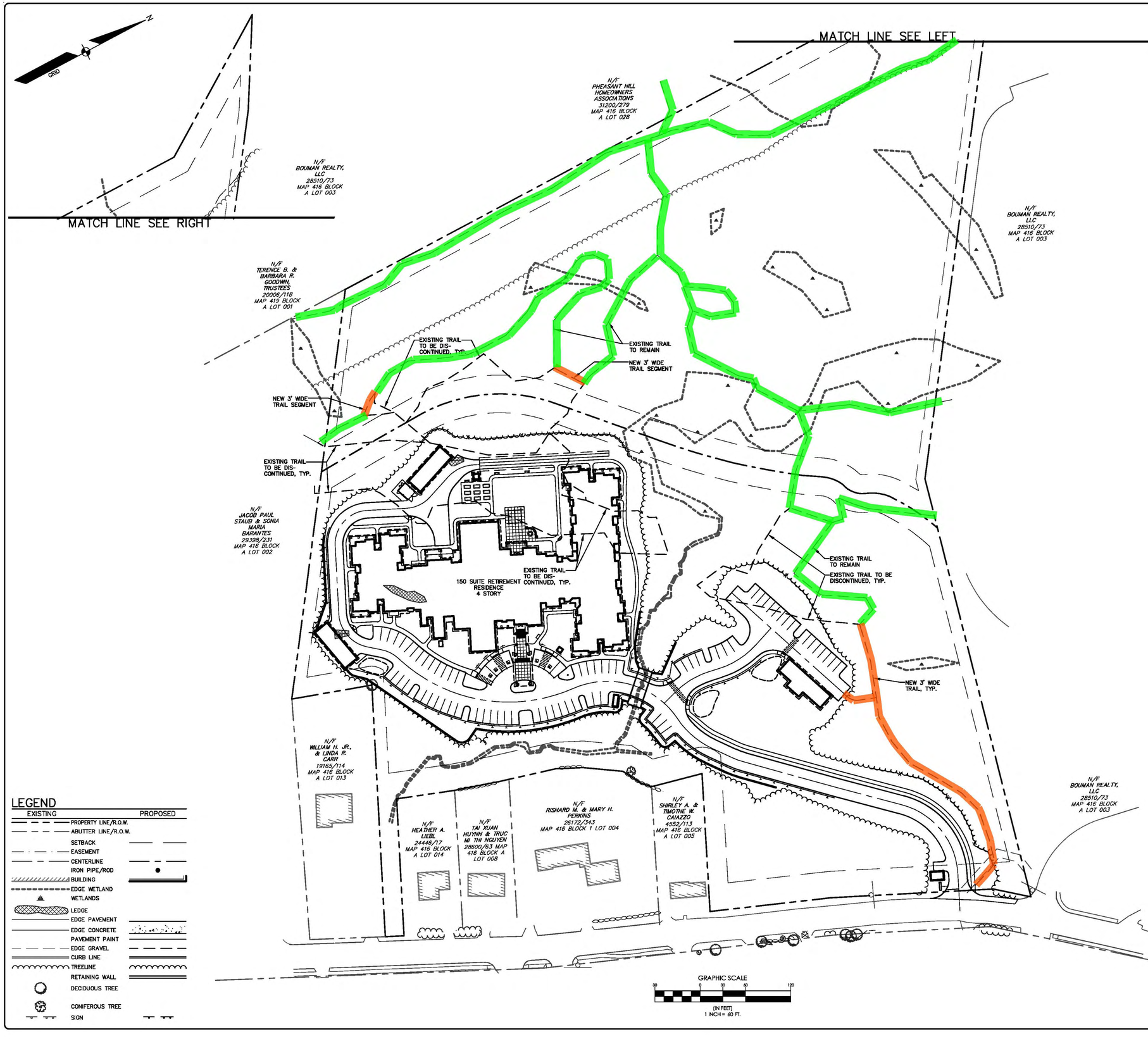
F.H. PER CIVIL DRAWINGS

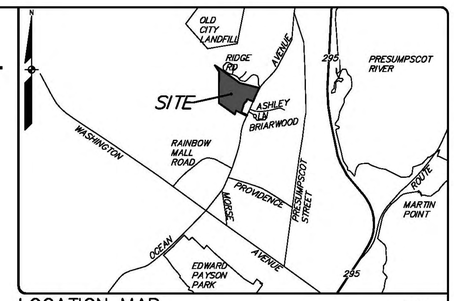
SIGN

PROJECT SIGN

134.90 F.F.E.

130.50 F.F.E.





LOCATION MAP

N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS GRAVES HILL LAND COMPANY, LLC BY DEED DATED JULY 1, 2004 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 21500, PAGE 269.
2. THE PROPERTY IS SHOWN AS LOTS A006, A007 AND A021 ON TAX MAP 416 AND LOT A007 ON TAX MAP 411 OF THE CITY OF PORTLAND TAX MAPS AND IS LOCATED IN THE BOTH THE R-5A RESIDENTIAL ZONE AND R-OS RECREATION AND OPEN SPACE ZONING DISTRICTS.
3. SPACE AND BULK CRITERIA FOR THE R5A AND ROS DISTRICTS ARE AS FOLLOWS:

	R5A	ROS
LOCUS AREA WITHIN ZONING DISTRICT:	10.171 ACRES	8.157 ACRES
MINIMUM LOT SIZE:	1,600 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONTAGE:	50 FEET	N/A
MAXIMUM LOT COVERAGE:	30%	25%
MINIMUM LOT WIDTH:	60 FEET	N/A
MINIMUM RECREATION OPEN SPACE:	200 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONT YARD:	35 FEET	25 FEET
MINIMUM SIDE YARD:	16 FEET	12 FEET
MINIMUM REAR YARD:	25 FEET	25 FEET
MAXIMUM BUILDING HEIGHT:	55 FEET	N/A

- SEE BUILDING LENGTH GREATER THAN 100'.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 798,387.448 SQUARE FEET OR 18.328 ACRES.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. IN DECEMBER 2014 AND JANUARY 2015.
6. PLAN REFERENCES:

   A. "PLAN SHOWING A BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY MADE FOR DIANE DOYLE, (MAILING ADDRESS: 16 TIFFANY LANE, SACO, ME 04072) PARCEL LOCATED AT OCEAN AVENUE, PORTLAND, MAINE" DATED JULY 8, 2002 AND REVISED THROUGH FEBRUARY 11, 2005 BY DOW & COULOMBE, INC. SHEETS 1 & 2 OF 2. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 204, PAGE 293 & PAGE 294.

   B. "ASBUILT SURVEY PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED NOVEMBER 29, 2005 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180.

   C. "BOUNDARY SURVEY & LOT DIVISION 752 OCEAN AVENUE, PORTLAND, MAINE MADE FOR DONALD ANSPACH, 752 OCEAN AVENUE, PORTLAND, MAINE" DATED MAY 25, 2004 AND REVISED THROUGH JUNE 18, 2008 BY TITCOMB ASSOCIATES, JOB NO. 87114.1.

   D. "STANDARD BOUNDARY SURVEY PLAN OF PROPERTY OCEAN AVENUE, PORTLAND, MAINE MADE FOR THE FINCH GROUP, 160 FEDERAL STREET, BOSTON, MA." DATED JULY 30, 1992 BY TITCOMB ASSOCIATES, JOB NO. 87114M.

   E. "OCEAN AVENUE STORM DRAIN AND SANITARY SEWER EXTENSION OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR OCEAN RIDGE REALTY, LLC, 91 OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED APRIL 3, 2001 AND REVISED THROUGH DECEMBER 3, 2002 BY SEBAGO TECHNICS, INC., PROJECT NO. 84180, SHEETS 15 & 16 OF 18 SHEETS.

   F. "OCEAN AVENUE RECONSTRUCTION PHASE 3 AND PHASE 4, PLAN AND PROFILE STA. 122+00 TO STA. 127+50" DATED AUGUST 31, 2007 BY CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS ENGINEERING SECTION, PROJECT NO. C04517, SHEETS 6 & 7 OF 23 SHEETS

   G. "AMENDED SUBDIVISION PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED MARCH 6, 2001 AND REVISED THROUGH MARCH 13, 2003 BY SEBAGO TECHNICS, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 203, PAGE 264 AND SUPERCEDES A PLAN RECORDED IN PLAN BOOK 202, PAGE 725.

7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON WERE OBSERVED IN NAVD88, BASED ON DUAL FREQUENCY GPS OBSERVATIONS. ELEVATIONS HAVE BEEN CONVERTED TO NGVD29 UTILIZING THE U.S.ARMY CORPS OF ENGINEERS CORPSCON 6.0.1 SOFTWARE. THE CONVERSION IN THIS VICINITY IS 0.70 FEET HIGHER THAN NAVD88. ELEVATIONS ARE TIED TO THE CITY OF PORTLAND, MAINE VERTICAL DATUM.
8. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EMDENCE 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 THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051 0007 C, HAVING AN EFFECTIVE DATE OF DECEMBER 8, 1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS AN UNSHADED ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOODPLAIN.
10. A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN NOVEMBER 2001 AND REVIEWED IN APRIL 2014 BY GARY M. FULLERTON, CERTIFIED SOIL SCIENTIST OF SEBAGO TECHNICS, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. WETLAND FLAGS WITHIN THE PROPOSED DEVELOPMENT AREAS WERE LOCATED BY GROUND SURVEY. WETLAND FLAGS OUTSIDE OF THE PROPOSED DEVELOPMENT AREA WERE LOCATED USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY. ALL GPS LOCATED POINTS HAVE A VARYING DEGREE OF ACCURACY AND MAY NOT REPRESENT THE ACTUAL FIELD LOCATION.
11. WITH REFERENCE TO ITEM 18 OF THE ALTA TABLE A, THE AREA ADJOINING THE NORTHERLY AND WESTERLY SIDELINES OF LAND OF CAIAZZO IS CLUTTERED WITH CONSTRUCTION AND RESIDENTIAL DEBRIS, TWO OLD VEHICLES AND ASSORTED HOUSEHOLD LITTER.

    THE AREA IN THE VICINITY OF THE USGS CONTROL DISKS IS ALSO BEING USED AS A DUMP SITE FOR LAWN DEBRIS BY THE ADJOINING CONDOMINIUM PROJECT.
12. EXISTING FOOTPATHS/TRAILS ARE AS DEPICTED HEREON, THEY ARE TYPICALLY ±2 FEET WIDE.

STATE OF MAINE — ROBERT M. FULLERTON — 10788 — REGISTERED LAND SURVEYOR — 11-20-15

Plan 23

DESIGNED	CHECKED
PDO	RAM

REV.	BY:	DATE:	STATUS:
B	RAM	11-20-15	RESPONSE TO CITY COMMENTS
A	RAM	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

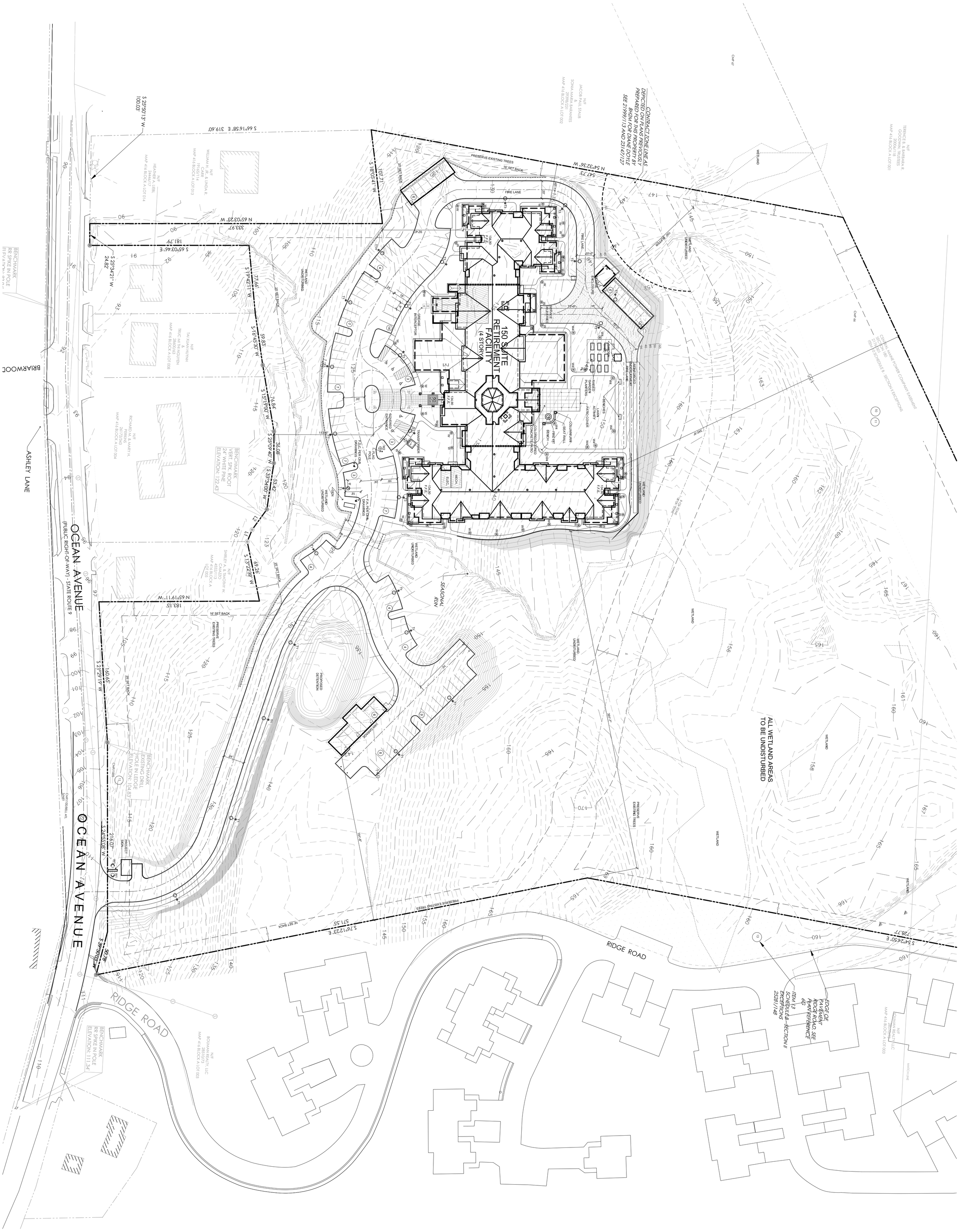
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel. 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel. 207-783-3656

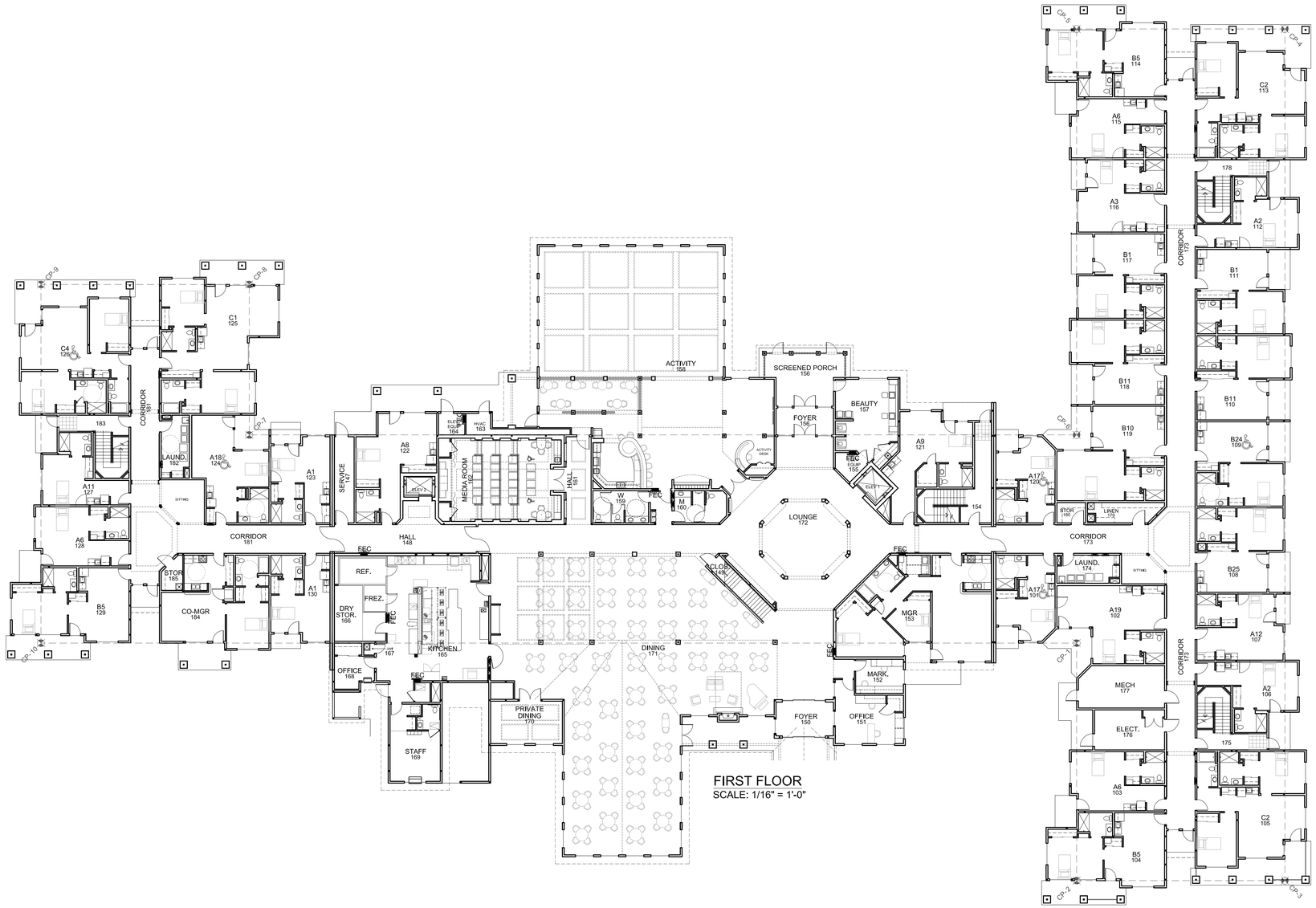
OVERALL SITE PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 60'

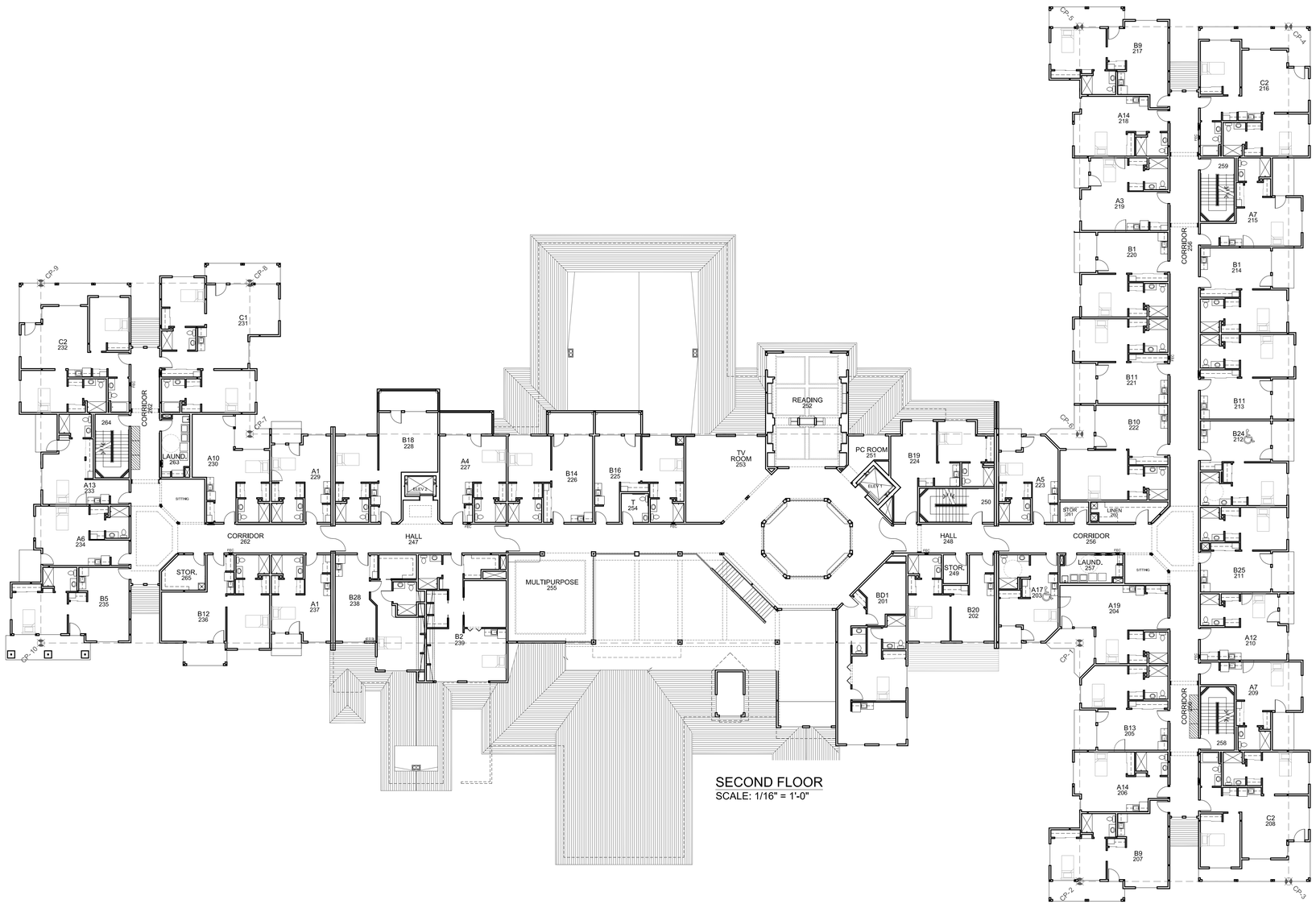
SHEET 4 OF 14

14432S.dwg, TAB: S

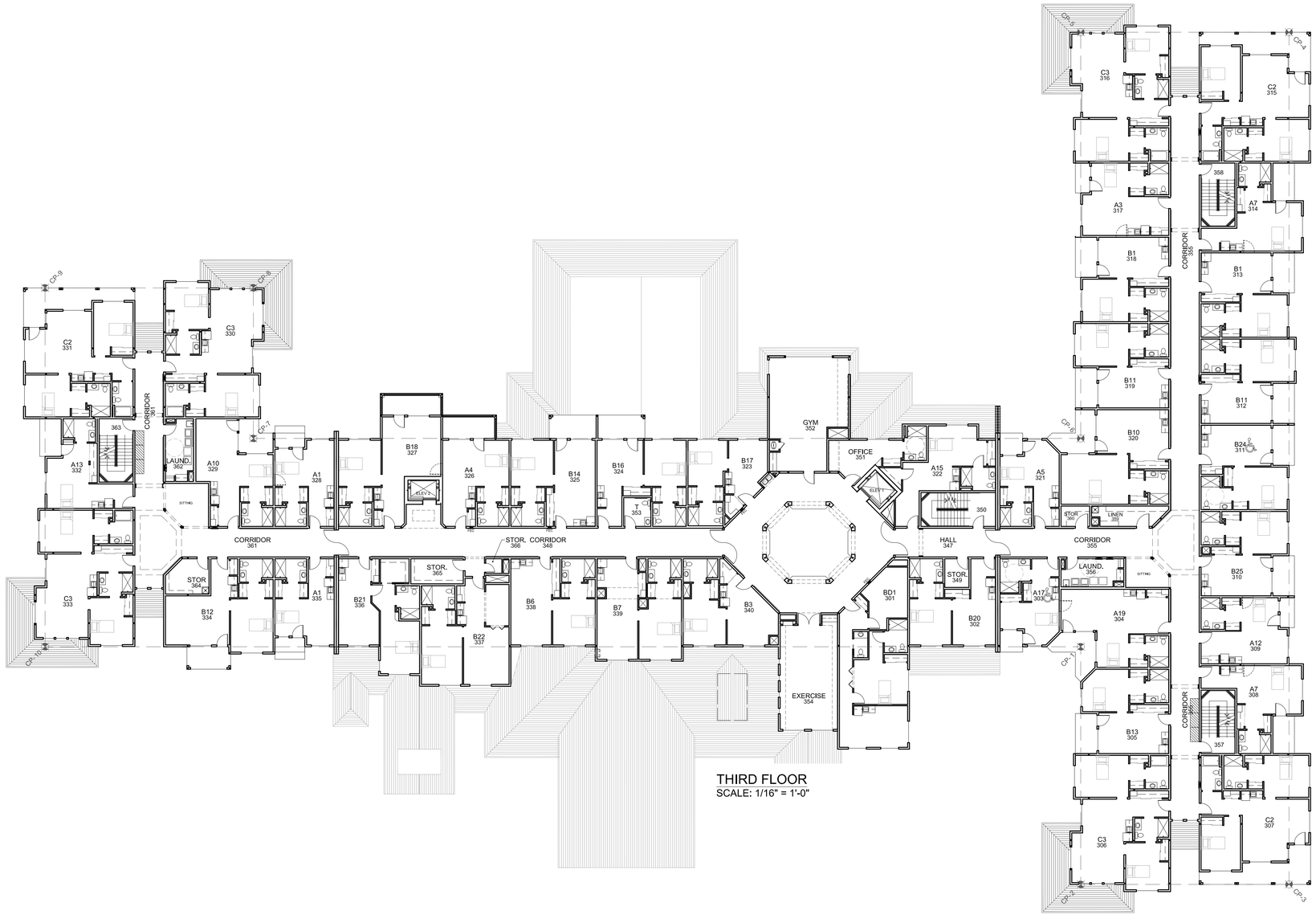

150 SUITE RETIREMENT FACILITY (4 STORY)
OCEAN AVENUE
(PUBLIC RIGHT-OF-WAY) - STATE ROUTE 9
ASHLEY LANE
BRIARWOOD
RIDGE ROAD
SEASONAL RUN
PROPOSED DETENTION
ALL WETLAND AREAS TO BE UNDISTURBED
CONTRACT ZONE LINE AS DEPICTED ON PLANS PREVIOUSLY PREPARED FOR THIS PROPERTY BY BH2M FOR DIANE DOYLE SEE 21999/113 AND 23147/122
EDGE OF PAVEMENT RIDGE ROAD, SEE PLAN REFERENCE dG
ITEM 13 SCHEDULE B - SECTION II EXCEPTIONS 23281/148
CENTRAL MAINE POWER COMPANY EASEMENT 2007/100 SECTION 1(B) ITEM SCHEDULE B - SECTION II EXCEPTIONS
PRESERVE EXISTING TREES
16' SET BACK
25' SET BACK
FIRE LANE
WETLAND
WETLAND UNDISTURBED
WETLAND DISTURBED
GREASE INTERCEPTOR
TRANSFORMER
COVERED ENTRANCE
FLAG POLE
RAISED GARDEN PLANTERS
BENCHES
LAWN ACTIVITY
PATIO COVER
COLUMN/URN
SEAT WALL
FIRE PIT BENCH
COLORED/STAMPED CONCRETE PATIO
REINFORCED UNDERLAYMENT FIRE LANE
TRASH ENCLOSURE
SERVICE DELIVERIES
MECH. ELEC.
134.90 F.F.E.
132.90 F.F.E.
T.S.C. PER CIVIL DRAWINGS
F.H. PER CIVIL DRAWINGS
TYP. GARAGE
PROJECT SIGN
BENCHMARK VERT. SPK. ROOT 24" WHITE PINE ELEVATION: 122.43
BENCHMARK RR SPIKE IN POLE ELEVATION: 111.34'
BENCHMARK EXISTING DRILL HOLE IN LEDGE ELEVATION: 104.83
BENCHMARK RR SPIKE IN POLE
N/F JACOB PAUL STAUB & SONIA MARA BARANTES 29398/231 MAP 416 BLOCK A LOT 002
N/F TERENCE B. & BARBARA R. GOODWIN, TRUSTEES 2006/118 MAP 416 BLOCK A LOT 001
N/F WILLIAM H., JR. & LINDA R. CARR 19163/114 MAP 416 BLOCK A LOT 013
N/F HEATHER A. LIEBL 24446/17 MAP 416 BLOCK A LOT 014
N/F TAI XUAN HUYNH & TRUC MI THI NGUYEN 28600/63 MAP 416 BLOCK A LOT 008
N/F RICHARD M. & MARY H. PERKINS 26172/343 MAP 416 BLOCK A LOT 004
N/F SHIRLEY A. & TIMOTHY W. CAIAZZO 45521/13 MAP 416 BLOCK A LOT 005
N/F BOUMAN REALTY, LLC 28510/73 MAP 416 BLOCK A LOT 003
N/F BOUMAN REALTY, LLC 28510/73 MAP 416 BLOCK A LOT 003
S 25°50'13" W 100.03'
S 66°16'58" E 319.60'
N 54°32'36" W 547.73'
S 18°05'41" W 107.71'
N 65°03'23" W 333.97'
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S 15°19'00" W 76.84'
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S 38°24'00" W 53.42'
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S 21°29'19" W 160.65'
S 24°55'08" W 216.07'
S 76°12'23" E 571.55'
S 54°24'50" E 728.77'
N 65°19'11" W 80.78'



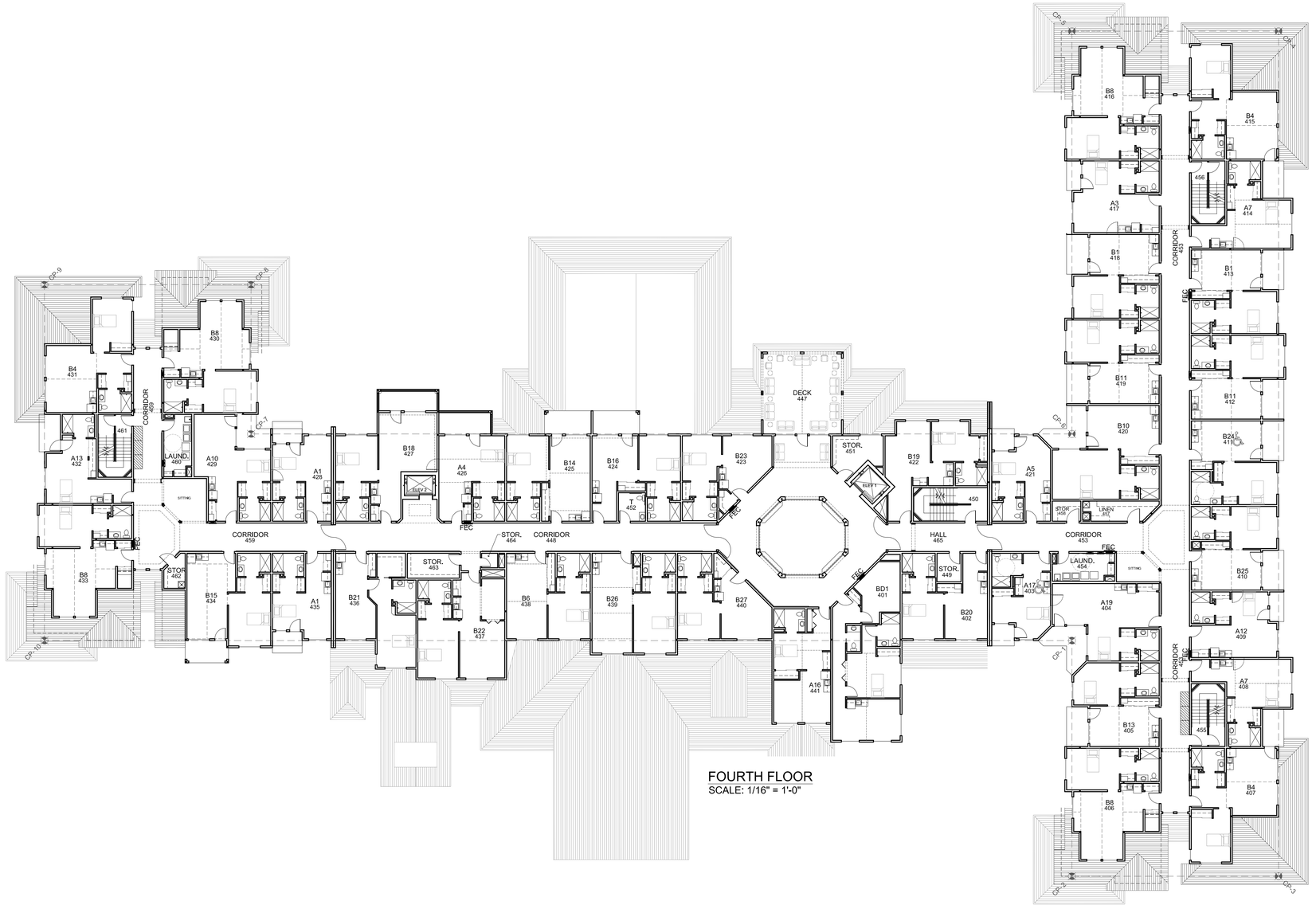
FIRST FLOOR
SCALE: 1/16" = 1'-0"



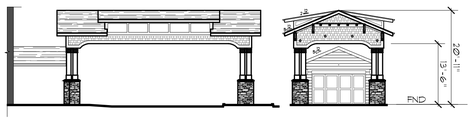
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SCALE: 1/16" = 1'-0"



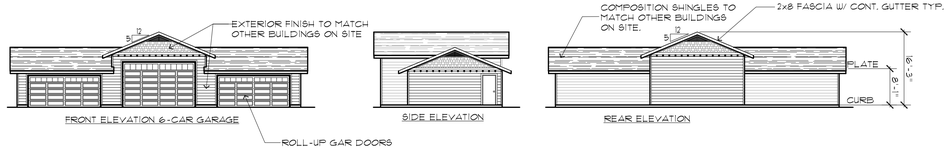
THIRD FLOOR
SCALE: 1/16" = 1'-0"



FOURTH FLOOR
SCALE: 1/16" = 1'-0"



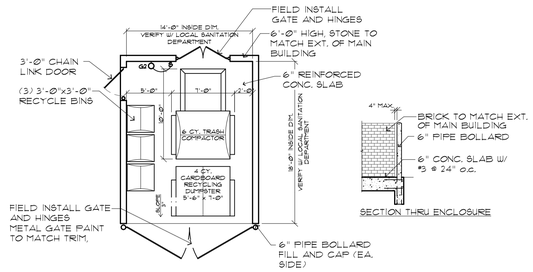
2 ENTRY CANOPY
SCALE : NTS



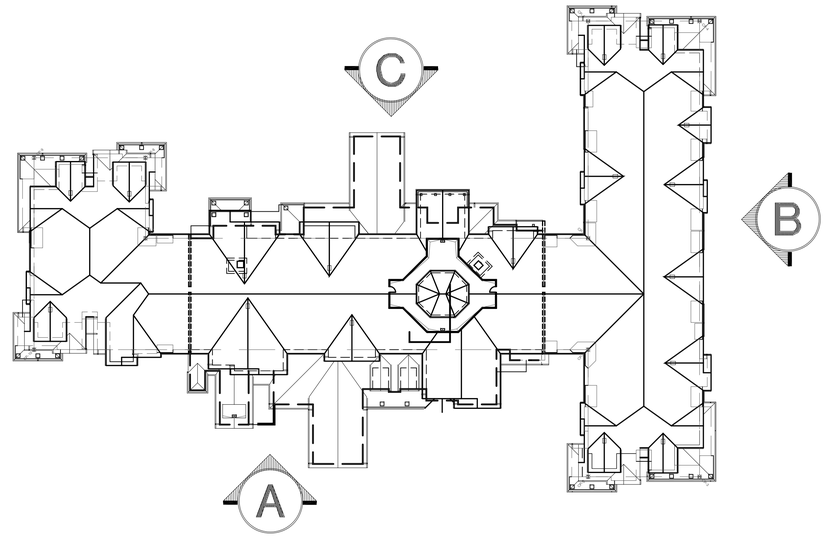
3 VAN GARAGE
SCALE : NTS



B WING B ELEVATION
SCALE : 1/8"=1'-0" (TYP. ALL DGN'S THIS SHEET U.O.N.)



1 REFUSE ENCLOSURE
SCALE : NTS





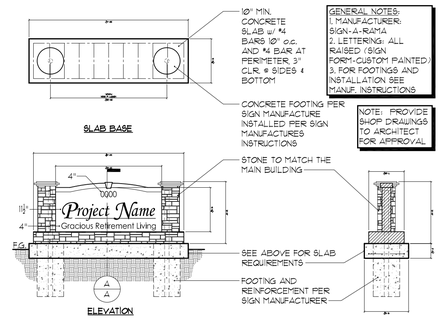
C REAR ELEVATION
SCALE : 1/8"=1'-0" (TYP. ALL DGN'S THIS SHEET U.O.N.)



D WING B ELEVATION
SCALE : 1/8"=1'-0" (TYP. ALL DGN'S THIS SHEET U.O.N.)



A FRONT ELEVATION
SCALE : 1/8"=1'-0" (TYP. ALL DGN'S THIS SHEET U.O.N.)



PROJECT SIGN
SCALE : NTS

Exterior Elevations

DATE: 06-01-15

lenity architecture
3150 Kettle Court SE, Salem, Oregon 97301
P 503 399 1090 F 503 399 0565 W lenityarchitecture.com

Portland Retirement Residence

Portland, Maine

HAWTHORN RETIREMENT GROUP
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

PLANNING BOARD REPORT
PORTLAND, MAINE

101 York Street Mixed Use Development
85-101 York Street
Level III Site Plan and Subdivision Review
2015-139
101 York Street, LLC

Submitted to: Portland Planning Board	Prepared by: Nell Donaldson, Planner
Date: December 4, 2015	CBLs: 40-C-3, 4, 5, 9, 18, 22, 25, 33 and 40-C-21
Public Hearing Date: December 8, 2015	Project #: 2015-139

I. INTRODUCTION

101 York Street, LLC has requested a final Level III site plan and subdivision review for a five-story mixed use development at 85-101 York Street, at the corner of York and High Streets near the city's West End. The proposed 97,565 SF development includes approximately 17,000 SF of first floor commercial and 63 market rate apartments on the four floors above. The proposal also includes a two-level parking structure with 211 spaces at the building's rear, sidewalk and landscaping improvements, and stormwater treatment facilities for a small area of site runoff. The site is currently occupied by a restaurant, office space, and surface parking. In the time since the preliminary review, the applicant has made significant modifications to the design of the building, the design of York Street, fire access, and the stormwater treatment system.

This development is being referred to the planning board for compliance with the site plan and subdivision standards of the land use code. A total of 199 notices were sent to property owners within 500 feet of the site and a legal ad ran in the *Portland Press Herald* on November 30 and December 1, 2015.

Applicant: Vincent Veroneau, 101 York Street, LCC
Consultants: Barry Stowe, Opechee Construction Corporation; Gorrill-Palmer Consulting Engineers; Owen Haskell, Surveyor

II. REQUIRED REVIEWS

Waiver Requests	***Applicable Standards***
Driveway separation – to allow driveway 40 feet from nearest curb cut to the east on York Street *Supported by Traffic Engineer with condition*	Technical Manual, *Section 1.7.2.7.* Along arterials and collectors, minimum acceptable spacing between multiple driveways on adjacent lots shall be 100 feet on streets with a speed limit of 25 mph or less.
Lighting – to allow an average illumination level of 1.5 fc and illumination levels greater than .1 fc on the adjacent properties on High and Danforth Street. *Supported by Planning staff*	*Technical Manual* standard, *Section 12.2.* Average illumination level shall not exceed 1.25 fc and maximum illumination levels at the property line shall not exceed .1 fc except where abutting non-sensitive uses.
Street trees – to plant 11 street trees, less than required *Supported by City Arborist*	Site Plan Standard, *Section 14-526(b)2.b(iii)* and Technical Manual, *Section 4.6.1.* All multi-family development shall provide one street tree per unit. Waiver permitted where site constraints prevent it, with applicant contributing proportionate amount to Tree Fund. *63 units = 63 street trees required. Contribution for 52 trees suggested.*

Review	***Applicable Standards***
Site Plan	*Section 14-526*, including Downtown Urban Design Guidelines
Subdivision	*Section 14-497*

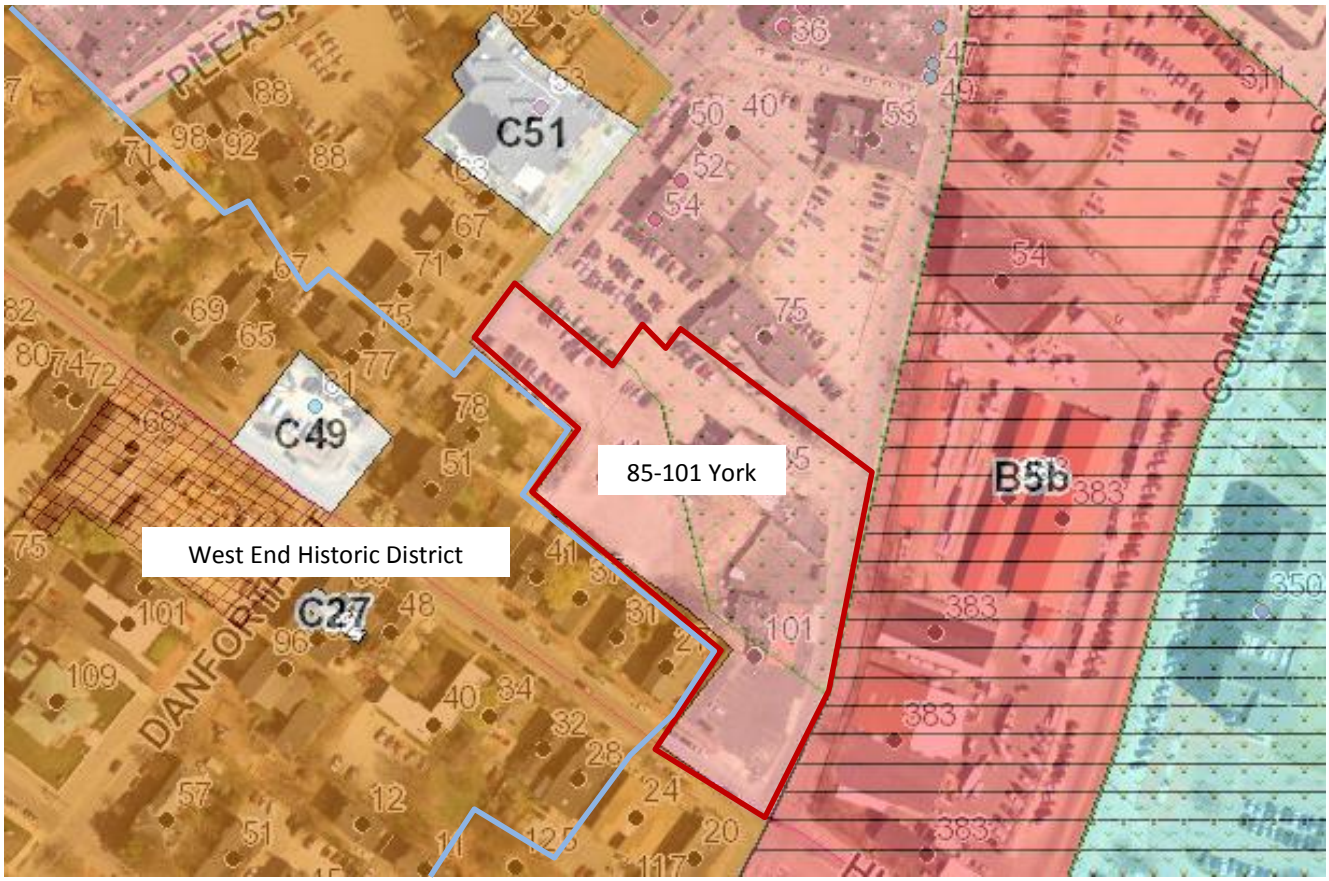
III. PROJECT DATA

Existing Zoning	B-3
Existing Use	Restaurant, office, and parking lot
Proposed Use	Mixed use (commercial and residential)
Proposed Development Program	App. 17,000 SF commercial (7,000 SF restaurant and 10,000 SF office) 63 apartment units (12 1-bedroom, 47 2-bedroom, 4 3-bedroom)
Parcel Size	72,930 SF

	Existing	*Proposed*	*Net Change*
Building Footprint	6,075 SF	17,505 SF	11,430 SF
Building Floor Area	11,650 SF	97,565 SF	85,915 SF
Impervious Surface Area	64,836 SF	66,072 SF	1,236 SF
Parking Spaces (on site)	App. 95	211 (122 projected demand)	116
Bicycle Parking Spaces	14	39 (19 interior)	25
Estimated Cost of Project	$18,000,000		



Figure 1: 85-101 York Street site







Figures 2, 3, & 4: Existing zoning at York and High Streets (top); existing site from York and High; existing site from Danforth Street

IV. BACKGROUND & EXISTING CONDITIONS

85-101 York Street lies at the corner of York and High Streets at one of the city's major gateways. Virtually all northbound Casco Bay Bridge traffic, as well as a share of the southbound volume, currently passes the property. The site, which a century ago housed residential development similar to that found north on High Street, has more recently served as the location of a gas station, a restaurant, office uses, and surface parking.

The site is actually a portion of a larger collection of nine distinct lots, all of which are held under common ownership *(Plan 2)*. The site is zoned Downtown Business B-3, but borders R-6 and B-5b zones. It is situated in the Downtown Height Overlay Zone, which regulates height, and the Downtown Entertainment Overlay Zone, which establishes a 100 foot dispersal requirement for facilities with entertainment licenses. The site is not in the Pedestrian Activities District.

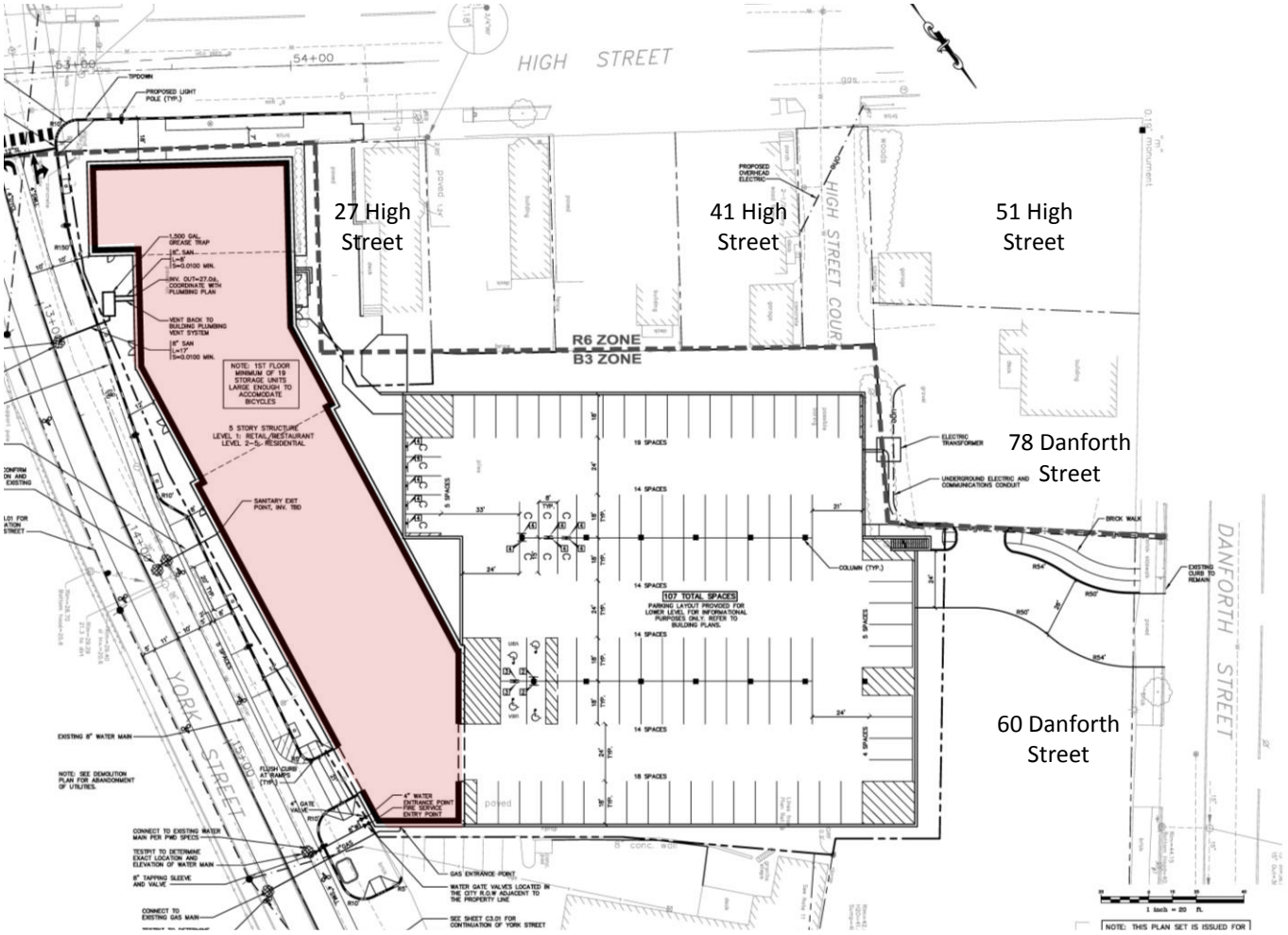


Figure 5: Site plan, with proposed building shown in red

The block which houses the site serves as an important transition between the fine-grained residential fabric of the historic West End to the north and west, the historic Old Port and the larger commercial office buildings of downtown to the east, and the city's industrial waterfront to the south. The site is bordered by the West End Historic District. As noted previously, it serves as a key gateway to the city, to the extent that it has been recognized as such in the city's *Design Manual.*

V. PROPOSED DEVELOPMENT

The applicant proposes to reconfigure nine existing lots and a portion of High Street Court, a private alley with access to High Street, in order to create a single contiguous lot for purposes of this development *(Plan 3)*. The development would consist of a five-story building with approximately 300 feet of frontage on York Street and 100 feet of frontage on High Street. Commercial space would occupy the first floor, with pedestrian access from York Street. 63 residential apartments would occupy the upper four floors, with access either from a door at the building's rear or from inside a driveway through the building at its eastern end. Vehicular parking would be provided in a two-level structure situated behind the proposed building, with lower level access from York Street and upper level access from Danforth Street. Because of grade changes, the structured parking area would read as surface parking from Danforth Street, and residential units on the second floor of the building would actually read as the first floor from the rear.

New brick sidewalks, street lights, and street trees are proposed on York and High Streets. The revised plans also include street trees on the York and High Street frontages, low landscaping along the building face on the High Street frontage, and additional landscaping between the parking and the building's rear. Stormwater treatment is proposed in a bioretention cell along the western property line adjacent to the parking area.

The plans also reflect some minor improvements at 27 High Street and 60 Danforth Street, two adjacent parcels owned by the applicant. These improvements include landscaping and hardscaping of a shared patio space at the building's rear on 27 High Street, and a driveway entrance on 60 Danforth Street.

VI. PUBLIC COMMENT

During the preliminary review, staff fielded one telephone call from a neighbor who raised concerns about the proposed height and view impacts of the proposal. No written comments have been submitted.

The applicant hosted a neighborhood meeting on Wednesday, September 3. The meeting minutes show that neighbors raised questions about height, traffic, parking and access, and stormwater *(Attachment S).*

VII. RIGHT, TITLE, & INTEREST

The applicant's submittal includes deeds as evidence of right, title, and interest. As noted above, the applicant has proposed to reconfigure nine lots to create a development site on the middle of what will be three newly defined parcels. Corporation Counsel has reviewed the plan for the new division of lots *(Plan 3)* and has not identified concerns.

The applicant proposes to use a portion of High Street Court, a private way from High Street which is bounded on the south and east by the applicant's property, for purposes of development. Under the final plans, the neighbor at 78 Danforth would relinquish rights to the High Street Court access, and the way would be developed as parking. The remainder of High Street Court would remain in private ownership, providing access to the garages of 41 and 51 High Street. The applicant also proposes to eliminate an 8 foot strip of land perpendicular to Danforth Street and designated in the survey as Palermo Road. In the final submittal, the applicant has indicated their intent to abandon this "road."

VIII. FINANCIAL & TECHNICAL CAPACITY

The estimated cost of the development is approximately $18 million. The applicant has submitted a letter from TD Bank indicating that their intent to consider financing for the project. The applicant has also provided a list of reference projects as a means of attesting to the technical capacity of Opechee Construction Corporation *(Attachment H)*.

IX. ZONING ANALYSIS

The applicant has provided a zoning analysis documenting that the plans meet most of the dimensional requirements of the B-3 zone *(Attachment E).* However, the final plans include some modifications with zoning implications which bear mentioning and some which remain unresolved. These include:

1. Building height

The height of the building has increased very slightly from the original height of 44.4 feet, as the grading around the building has been modified. It should also be noted that the City Council has amended the Downtown Height Overlay Map since the time of the preliminary review, making the maximum height at York and High Streets 65 feet. Given this change, the building is well within the height limit established by the Downtown Height Overlay Map, even with the minor changes in grading.

2. 5' Build-to line

In the final plans, the building continues to exceed the B-3 zone's maximum front yard setback of five feet in several locations. The plans show the point of greatest building setback on the York Street frontage at just over 21 feet *(Figure 6).* In their preliminary submittal, the applicant argued that these setbacks are necessary because of the "unusual geometry of the right-of-way line along the frontage" *(Attachment G).* The applicant has also stated that the increased setbacks will "provide pleasant sidewalk widths while accommodating east-west bike lanes, east-west sidewalks and on-street parking" and provide an "opportunity to support open space amenities such as building entries, outdoor seating, street trees, bike racks, and municipal lighting" *(Attachment U).*

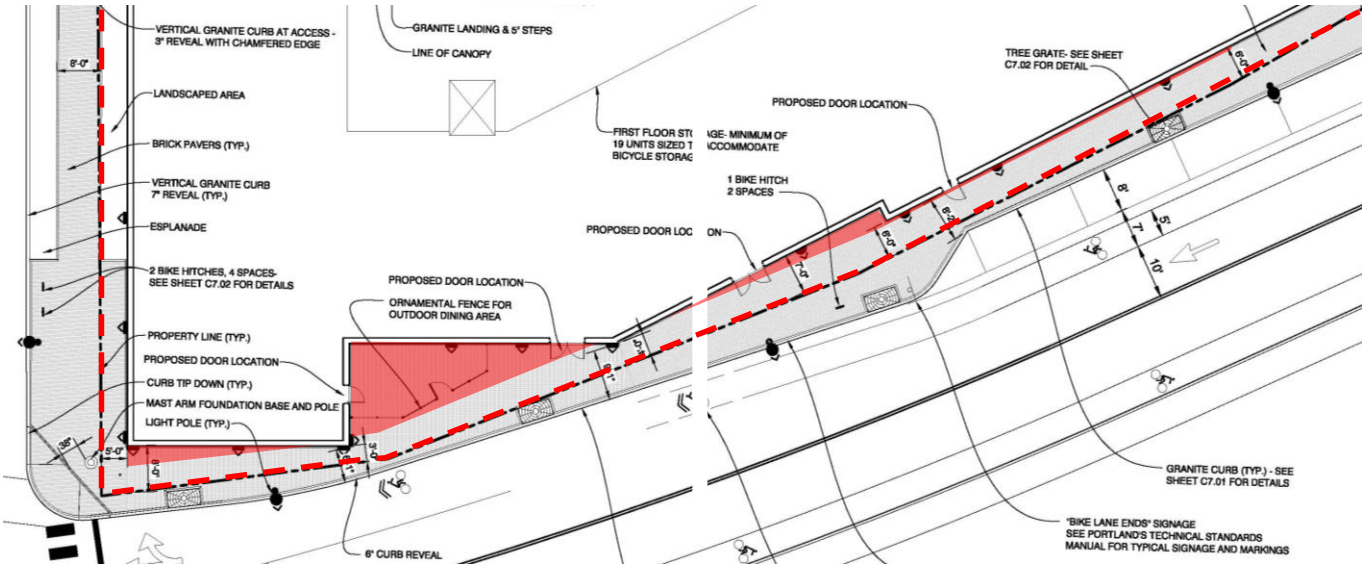


Figure 6: Approximate areas of increased setback on York Street

Under the site plan ordinance, the planning board may grant an extension of the B-3's maximum setback if "the Planning Board requires or approves an additional distance to comply with the requirements of *Section 14-526(d)9* (Zoning-Related Design Standards)." The *Design Manual* explicitly establishes guidelines for increasing the setback beyond the build-to line, including cases where the increased setback:

- Provides substantial and viable publicly accessible open space or other amenity at the street level
- Does not substantially detract from the prevailing street wall character
- Does not detract from existing publicly accessible open space by creating an excessive amount of open space; and
- Provides areas of high quality and character of design and of acceptable orientation to solar access and wind impacts as to be attractive to pedestrian activity.

The applicant has responded to these guidelines in their design narrative, stating that the increased setbacks will create high quality and active public space *(Attachment Q).*

At the planning board workshop on this proposal, board members requested that staff provide examples of other cases in which deviations from the B-3 build-to line had been granted in the past. The most comparable recent case is the Hampton Inn at the corner of Franklin Street and Fore Street. In 2010, the board granted an increased setback of almost 10 feet on this site in order to improve pedestrian access along the southern side of the building and to allow some area for outdoor seating.

In the case of the present development, the increased setbacks provide some relief for what will be a fairly narrow sidewalk in several locations. The applicant has worked with staff to arrive at a York street cross-section which accommodates vehicles, bicycles, and some on-street parking. The result is a curb line which falls fairly close to the property line in a number of areas. In order to provide sidewalks of significant enough width to create a comfortable pedestrian experience, extended setbacks are desirable.

However, it should also be noted that the final plans have removed some pedestrian level details, most notably the sidewalk seat wall and planters, which in the preliminary plans enhanced the streetscape in these areas of increased setback. Staff's urban design review has questioned the removal of the seating wall *(Attachment 1).* Further, the design review states that "the ornamental fence around [portions of] the proposed additional setback…removes public access to the widened sidewalk. Planning staff recommends a finding that the increased setback provides substantial and viable publicly accessible open space, does not detract from the street wall character, does not create an excessive amount of open space, and provides areas of high quality and character of design, subject to the applicant finalizing the design of the areas of increased setback for review and approval by the city's urban designer.



Figure 7: High Street facade

3. Maximum length of undifferentiated blank wall along a public street

Lastly, the final plans show what appears as a largely blank wall, approximately 50 feet in length, on the High Street façade, which exceeds the 30 foot maximum established by zoning *(Figure 7)*. The preliminary plans treated this wall with a raised planter which provided some relief. In the final plans, largely deciduous landscaping is proposed, and all plantings rest on the ground plane. Staff has suggested that the applicant replace the planter, add a tiered seating wall, and/or revise the landscaping plans to depict evergreen landscaping or climbing plants on trellises in this area. This has been included as a condition of approval.

X. SITE PLAN SUBMISSION REQUIREMENTS *(Section 14-527)* and SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS *(Section 14-496)*

The applicant has provided a revised subdivision plat for review by the city's surveyor. Finalizing this plat per *Section 14-496* has been included as a condition of approval. In addition, the applicant has indicated their intent to eventually divide the building into condominium units. As such, condominium documents have also been included as a condition of approval.

In the revised submittal, the applicant has provided an updated list of proposed easements *(Attachment F).* Among these, the applicant proposes:

- A public access easement for areas of the sidewalk on York and High Streets not in the right-of-way;
- Access, utility, and maintenance easements from 27 High Street to 101 York Street (for areas including a proposed bioretention cell, a proposed fire lane, and patio to benefit 101 York);
- Utility and construction easements from 78 Danforth Street to 101 York Street;
- An access easement from 60 Danforth Street to 101 York Street, 78 Danforth Street, and 27 High Street;
- A utility easement from 60 Danforth Street to 101 York Street and 78 Danforth Street;
- A utility easement to 78 Danforth Street from 101 York Street; and
- A construction easement from 75 York Street.

In addition to these easements, a grading easement may be necessary from the property to the east at 60 Danforth Street. Per the final plans, a drainage easement from the city for a storm drain proposed in the right-of-way would also be required. All of these easements have been suggested as conditions of approval.

It should be noted that the project will require a Notice of Intent to Comply with the Maine Construction General Permit. A copy of this Notice of Intent has been included as a condition of approval.

The applicant provided draft construction management plans with the preliminary plan submittal. Since blasting is proposed, the applicant will be required to follow the relevant standards in Article VIII of the land use code as well as the city's *Technical Manual*. Staff has requested that this be noted on the revised construction management plans. In their final submittal, the applicant has also indicated that construction easements will be necessary from 75 York to demolish an existing retaining wall and78 Danforth for the construction of the Danforth Street driveway, landscaping, and grading. These easements should also be noted on the construction management plans. Final construction management plans have been included as a condition of approval.

XI. SUBDIVISION REVIEW *(14-497(a). Review Criteria)*

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's subdivision ordinance. Staff comments are below.

1. Water, Air Pollution

The project is not anticipated to result in undue air or water pollution.

2 & 3. Adequacy of Water Supply

The plans show water service from an existing 8-inch main in York Street. The applicant has provided evidence of capacity from the Portland Water District *(Attachment N)*.

4. Soil Erosion

No unreasonable soil erosion or reduction in the capacity of the land to hold water is anticipated.

5. Impacts on Existing or Proposed Highways and Public Roads

The applicant has provided a traffic impact study prepared by Gorrill-Palmer Consulting Engineers *(Attachment I)*. Tom Errico, the city's consulting traffic engineer, has reviewed the study and provided comments *(Attachment 2)*, which are discussed in detail under site plan review below.

6. Sanitary Sewer/Stormwater Disposal

Two 8-inch sewer lines are proposed to service the building; both would outlet to York Street. A 1,500 gallon grease trap is proposed on private property. The applicant has submitted a wastewater capacity application to the Department of Public Services *(Attachment N)*. A capacity letter had not been finalized at the time of the writing of this report. This has been included as a condition of approval.

The applicant has provided stormwater management and utility plans. Both David Senus, the city's consulting civil engineer, and David Margolis-Pineo, of the city's Department of Public Services, have reviewed these plans *(Attachments 3 and 4)*. Comments are discussed in more detail under site plan review below.

7. Solid Waste

The applicant has proposed a trash and recycling room adjacent to the residential entrance and has indicated that a waste management contractor would provide waste removal service. Commercial tenants would be responsible for moving waste to off-site containers provided by the owner, and a commercial contractor would then remove waste from these containers. The project is not anticipated to cause an unreasonable burden on the ability of the city to dispose of solid waste.

8. Scenic Beauty

This proposal is not deemed to have an adverse impact on the scenic beauty of the area.

9. Comprehensive Plan

The applicant's narrative argues that the project would achieve a number of the purpose statements of the B-3 zone including increasing housing opportunity, enhancing and promoting the orderly expansion of retail and service business downtown, maintaining and enhancing the role of downtown as the region's business and commercial center, and providing adequate parking and transportation facilities which promote accessibility, enhance and encourage development opportunity, and enhance and protect the pedestrian environment *(Attachment M)*. The project also helps to meet comprehensive plan goals related to "support[ing] Portland's livable neighborhoods by encouraging a mix of uses that provide needed goods and services within walking distance of most residents," "encourag[ing] neighborhood business centers throughout the city to reduce dependence on the car and make neighborhood life without a car more practical," "encourag[ing] higher density housing for both rental and home ownership opportunities, particularly located near services, such as schools, businesses, institutions, employers, and public transportation," and "increas[ing] Portland's rental housing stock."

10. Financial and Technical Capacity

As noted above, the applicant has provided evidence of financial and technical capacity (*Attachment H*).

11. Wetland/Water Body Impacts
There are no anticipated impacts to wetlands.

12. Groundwater Impacts
There are no anticipated impacts to groundwater supplies.

13. Flood-Prone Area
Per the city's existing flood maps, the site is not located in a flood zone.

XII. SITE PLAN REVIEW *(Section 14-526)*

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's site plan ordinance. Staff comments are below.

1. Transportation Standards

a. Impact on Surrounding Street Systems

As noted above, the applicant has provided a traffic impact study in the revised submittal, which includes a trip generation analysis based on the proposed site uses, factoring in a credit for all uses in operation on the site over the last ten years *(Attachment I)*. The analysis projects 93 AM peak hour and 83 PM peak hour trips. These numbers do not meet the threshold for a Maine DOT Traffic Movement Permit.

In the impact study, the applicant has also supplied a capacity analysis for three adjacent intersections, all of which lie on High Street. The analysis finds that one of these intersections, the York Street/High Street intersection, is projected to experience a decline in level of service from LOS C to LOS D in the PM peak hour under the buildout condition. Other intersections are projected to continue to operate at the pre-development level of service for both the AM and PM peak hours. The impact study also includes an analysis of sight line distances and high crash locations in the area. The study finds sight lines technically sufficient. There are no high crash locations in the immediate study area. Tom Errico, the city's consulting traffic engineer, has reviewed this impact study and stated that he has no further comments.

b. Access and Circulation

The plans include new brick sidewalks on York and High Streets and a diagonal ramp at the York and High Street corner. No new crosswalks are currently proposed. Mr. Errico has reviewed the plans and requested that the applicant modify the design of the sidewalk at the northeast corner of the York Street/High Street intersection to improve ADA compliance. He writes,

> *The applicant shall revise the handicap ramp layout on the corner of High Street and York Street such that two distinct ramps are provided – the preferred ADA layout configuration. Final designs plans shall be provided for review and approval.*

Related to this corner, Mr. Errico has also requested that the applicant relocate the signal mast arm in this location, which obstructs ADA access. He writes,

> *The applicant shall replace the existing mast arm structure and supporting equipment and relocate the structure to a location that meets ADA and MUTCD requirements. The existing support is old and given that the corner area is being reconstructed, this is the time for replacement. I would note that site plan requirements for upgrading traffic signal equipment is typical for projects of significant scope and traffic generation, as proposed. Final details of the revised traffic signal shall be provided for review and approval.*

It should be noted that the Hyatt hotel at 433 Fore Street was required to replace a mast arm under similar circumstances in 2012.

Pedestrian access to the commercial units is proposed at-grade from York Street. The primary access to the residential units would be from a door at the rear of the building. This door would be accessible to the street either via a paved way from High Street (which, in the final plans, serves as a fire lane) or from the parking area. A secondary entrance would be provided inside the driveway access from York Street. The applicant has documented an ADA accessible route on the grading plan *(Plan X)* and stated that the entire York Street sidewalk has a cross slope of 2% or less. During the preliminary review, staff requested that the applicant make the primary residential entrance more legible from the street. In order to do so, the applicant has added a canopy, granite steps, and a cornerstone depicting the address.

Vehicular access is proposed via two curb cuts, one at the east end of the site on York Street and the other on Danforth Street. The York Street entrance would cut through the first floor of the building and provide access to the lower level of the parking at the property's rear. This entrance is currently proposed with a brick crosswalk in the city right-of-way. Regarding this crosswalk, David Margolis-Pineo, of the city's Department of Public Works, writes,

> *Asphalt drive aprons are required in this area of the City. The applicant is requested to eliminate the proposed brick crosswalk across the drive apron.*

Alternatively, if the applicant wishes to pursue the brick crosswalk, it would require City Council approval as a deviation from the city's sidewalk material policy.

The York Street driveway is proposed proximate to the nearest existing driveway to the east. This allows the driveway to sit well away from the York Street/High Street intersection, approximately 280 feet, but fails to meet driveway separation requirements. A waiver is required. Mr. Errico writes,

> *The driveway on York Street does not meet City driveway separation standards. The applicant shall narrow the adjacent driveway to the east to 20 feet with the intent of maximizing driveway separation. I support a waiver from the City's Technical standards following this change.*

All of the sidewalk and curbing associated with the curb cut to the east lies within the city's right-of-way.

The second driveway, proposed from Danforth Street, is designed to provide access to the top deck of the parking area. It technically lies on the adjacent property at 60 Danforth, with a proposed access easement to the property at 101 York Street. In reviewing this driveway, Mr. Errico writes,

> *The adjacent driveway to the east [of the Danforth Street driveway] shall be relocated (or closed) at the time of redevelopment [of the adjacent lot] to meet City driveway separation standards or the applicant can relocate or close the driveway now prior to Danforth Street becoming a moratorium street due to a future paving resurfacing project.*

With respect to the adjacent street design and in response to Mr. Errico's preliminary comments, the applicant has revised the cross-section of York Street to incorporate two five foot bicycle lanes, two 10' and 11' foot travel lanes, a two foot shoulder, an eight foot parking lane in its widest section, and a left-hand turn lane at the High Street intersection. Regarding the revised cross-section, Mr. Errico writes,

> *The plan has been revised to include bicycle lanes on both sides of York Street with a shared lane configuration approaching High Street. The City standard for a bicycle lane width abutting on-street is 6 feet or a bicycle buffer be provided. Additionally, the termination of the bicycle lane in the eastbound directions needs to have a formal transition. It is recommended that the applicant submit a final pavement marking layout design plan for review and approval by the City.*

Mr. Margolis-Pineo's and Mr. Errico's comments on access and circulation have been reflected in the proposed conditions of approval.

c. Public Transit Access

Greater Portland METRO operates a transit line through the West End which travels eastbound on Danforth Street and north on High Street in close proximity to the site, and South Portland currently provides transit service on High Street directly adjacent to the site. However, transit facilities have generally not been required in instances when other municipalities' transit service is involved. As such, staff is not requesting a transit facility here.

d. Parking

Division 20 of the land use ordinance establishes parking requirements by use but also grants an exception for projects that exceed 50,000 SF of floor area, allowing the planning board to determine the parking requirement in these cases. Since this project exceeds the 50,000 SF threshold, the applicant has submitted a parking study in an effort to establish parking demand *(Attachment I)*. This study is fundamentally based on the city's parking ordinance, and assumes several credits based on shared use and shared parking/offset periods of peak demand. The study estimates a total vehicular parking demand of 122 spaces.

The applicant's preliminary plans show 211 parking spaces, far exceeding the projected parking needed for the project. In this way, the plans are designed to account not only for the project but also for existing parking spaces on the property that are currently used for off-site parking for other users. The parking study estimates that 59 such spaces currently exist on site.

Mr. Errico has reviewed the parking analysis and parking plan and writes,

> *The applicant has provided a plan of the [parking] layout, but dimensions are not provided. If the layout meets City dimensional requirements, I have no further comment (the applicant should provide documentation of dimensions).*

Staff has suggested a condition of approval addressing this comment.

The final plans continue to show bicycle hitches at five locations around the perimeter of the building and the site, including eight spaces on York Street, four spaces on High Street, four spaces in the parking area, and four spaces on Danforth Street. In the final submittal, the applicant has added bicycle storage within the building as well, to bring the total bicycle parking to 39. This number meets the bicycle parking requirement.

e. Transportation Demand Management

A transportation demand management plan is not required.

2. Environmental Quality Standards

a. Preservation of Significant Natural Features

There are no known significant natural features on the site.

b. Landscaping and Landscape Preservation

The final landscaping plans include a variety of trees, shrubs, and perennials on both the York and High Street frontages and at the building's rear and side. In addition, the applicant has revised the plans to add significant landscaping, including zelkovas, river birches, juniper, hostas, yew, winterberries, Korean lilacs, and soft rush to the west of the parking area. As noted above, this area now includes a bioretention cell for stormwater treatment. In his comments, Mr. Senus has noted that some of the proposed planting may conflict with the bio-cell. He writes,

> *It appears that trees and larger buffer/screening plantings (bushes) are proposed within the bioretention cell; some of these plantings are not allowable per MaineDEP BMP design guidance. The planting plan should be coordinated with the civil plans.*

Jeff Tarling, the city's arborist, has requested that plantings at the interior of the site be curbed. He writes,

> *[The interior of the site] contains a mix of trees, shrubs and ornamental grasses, herbaceous plants. Landscape planting next to pavement should be protected by curbing unless part of the stormwater feature.*

Per the site plan ordinance, 63 street trees, at one per residential unit, are technically required. Given site constraints, however, only 12 street trees, including sugar maples, ginkgos, and zelkovas, are proposed. Mr. Tarling has reviewed the street tree plantings and noted the following of the York Street street trees,

> *The 2 street-trees next to the 'on-street' parking, should include 'Neenah' R-8811 tree grates 72" x 48" or the R-8810 if the sidewalk space is too narrow.*
>
> *The tree to the east and the two to the west on the High Street side should be in raised tree planters, see city standard spec.*
>
> *The street tree closest to High Street should be removed to improve visibility near the busy intersection.*
>
> *The third tree back close to the on-street parking should be placed in a raised planter that includes the 'bump-out' shifting the tree slightly to the right, tree #2 from High Street needs to shift slightly away from the pinch point, perhaps +/- 8' towards High Street.*

Assuming the street tree proposed closest to the York and High Street intersection is removed as requested, a contribution for 52 street trees, or $10,400, would be required. However, and in keeping with other recent projects, Mr. Tarling has also agreed that the cost of the raised granite tree wells, at $2,000 a piece, should be treated as a credit toward the street tree requirement. Assuming the tree wells requested by Mr. Tarling can be accommodated in the York Street frontage, the applicant will be responsible for a total of three. After accounting for these as a credit, the resulting street tree contribution is $4,400.

Mr. Tarling has also commented on the street tree species, writing,

> *The proposed 'Green Vase' Zelkova street trees along York Street should be switched to 'Mussahino' Columnar Zelkova to have less interference to building and traffic. See: http://www.jfschmidt.com/articles/musashino/*
>
> *For salt tolerance reasons the 'Green Mountain' Sugar Maple would ideally be switched to a 'Karpick' Red Maple.*

Lastly, Mr. Tarling has also requested additional landscaping along the Danforth Street driveway, with the intent of providing some screening for the parking area, which, as a structured facility, cannot be landscaped. He writes,

> *Additional planting / screening is recommended on the Danforth Street frontage. This would be the area to the right of the Danforth Street driveway. This might be place for something like the 'Satelite' Bosnian Pine or Swiss Stone Pine.*

Mr. Tarling's landscaping comments, as well as Mr. Senus's, have been reflected in the conditions of approval.

c. Water Quality/Storm Water Management/Erosion Control

The applicant has provided a stormwater management plan *(Attachment L),* which documents that the site is currently occupied by a surface parking lot, a restaurant, and an office building. The project will disturb 80,670 SF of the parcel and result in a total of 66,072 SF of impervious area, or an increase in 1,236 SF. In the final plans, the applicant proposes to treat a small area of runoff, approximately 2,600 SF, in a bioretention cell to the west of the parking area. This cell would outlet to High Street. The majority of the remainder of the site's runoff, including the roof drain, storm drain from the upper parking level, and foundation drain from the northwest side of the building, would also be collected and conveyed to the city's storm drain in High Street. Given existing grades, the applicant is proposing to direct the runoff from the lower level parking and the foundation drain from the easterly side of the building through two outlets to the combined sewer system in York Street. Both of these outlets would incorporate check valves. An oil/water separator is proposed for the lower parking area runoff *(Attachment L).*

Mr. Senus has reviewed the design of the biocell system and provided the following comments,

> *Table 5 of the Stormwater Management Report indicates that the proposed Filter Surface Area is 18,992 SF; this number appears to be incorrect and should be clarified.*
>
> *The stormwater inspection and maintenance plan should identify the annual reporting requirements per Chapter 32 of the City of Portland Code of Ordinances.*

These comments have been reflected in the conditions of approval.

3. Public Infrastructure and Community Safety Standards

a. Consistency with Related Master Plans

As noted above, the project is generally deemed consistent with related master plans.

b. Public Safety and Fire Prevention

During the preliminary review, the city's Fire Prevention Bureau raised concerns regarding emergency access to the rear of the proposed building. In response, the applicant has revised plans to show a 20 foot fire lane, accessed over a vertical curb from High Street, which would allow fire personnel to reach significant portions of the rear of the building. As noted in the applicant's original life safety summary, the building would also be fully sprinklered *(Attachment P).*

Assistant Fire Chief Keith Gautreau has reviewed the revised plans and verbally indicated that he approves of the design. However, the Assistant Chief was not available to formally comment in advance of the writing of this report. As such, his approval has been included as a condition of approval.

c. Availability and Capacity of Public Utilities

The Portland Water District has provided documentation of capacity to serve the project *(Attachment N).* David Margolis-Pineo, of the City's Department of Public Works, has requested additional information from the applicant related to sewer capacity. As noted above, a sewer capacity letter has been included as a condition of approval.

As previously described, the majority of the site's runoff would be collected and conveyed to the city's storm drain in High Street. As proposed, runoff from the bioretention cell would outlet to this storm drain via a line running under the sidewalk in the High Street right-of-way. Mr. Margolis-Pineo has requested that this storm drain be relocated to private property. Mr. Senus echoes this sentiment,

> *The Applicant has proposed 80 linear feet of 12" storm drain pipe between DMH 1 and DMH2 within the High Street Right-of-Way, below the sidewalk. The Applicant should consider relocating this storm drain closer to the building and within the property limits, or, if acceptable to the City, an easement or agreement will be necessary between the*

property owner and the City to identify the maintenance responsibilities for this infrastructure.

Given existing grades, the applicant is proposing to direct the remainder of the site runoff to the combined sewer system in York Street. These outlets will incorporate check valves. An oil/water separator is proposed for the lower area parking area runoff. Regarding the oil/water separators, Mr. Senus writes,

Sheet C4.01 includes a note stating that Casco traps shall be installed on stormdrains outletting from catch basins in the parking garage to act as an oil/water separator. Casco traps are a typical requirement for all catch basins connected to the City's storm drain or combined sewer system; however, the City requires that a separate structure designed for capture, storage and removal of oil and grit be provided for enclosed parking facilities. The City has accepted proprietary oil/water separators, or in-line manhole structures with sumps and inverted pipes on the outlet to provide for separation and capture of oil and grit. Exact requirements should be coordinated with DPW.

Regarding the sewer connections, Mr. Margolis-Pineo writes,

The City requires wastewater laterals 8" and larger be connected to manholes. In this case with a 36" oval brick sewer, core drilling or connecting into an existing manhole is preferred. More direction may be forth coming from John Emerson who heads up the City's Sewer Maintenance Division. 318-0239 Please be aware that the City requires a backflow preventer on all proposed laterals connecting to a combined sewer.

A condition of approval has been drafted to address these comments.

4. Site Design Standards

a. Massing, Ventilation, and Wind Impact

The bulk, location, or height of the building is not likely to result in health or safety problems from a reduction in ventilation to abutting structures.

b. Shadows

The project is proposed in the B-3 zone; as such, this standard does not apply.



Figure 8:Rendering of High Street view corridor, with 101 York Street at bottom left

c. Snow and Ice Loading
The project is not anticipated to cause snow or ice loading issues.

d. View Corridors
High Street is designated in the city's *Design Manual* as a protected view corridor. The applicant previously provided a rendering showing the view down High Street with the building massing as proposed *(Figure 8)*. Per the site plan standard pertaining to view corridors, "the massing, location, and height of development shall not substantially obstruct public views." Given the applicant's renderings, no substantial obstruction of public views is anticipated.

e. Historic Resources
The project includes some minor site work on one parcel within the West End Historic District, 27 High Street. As such, this site work is subject to review for conformance with the historic preservation ordinance standards. Historic Preservation staff has not yet signed off on the site alterations at 27 High Street. As such, this has been included as a condition of approval.



Figure 9:Rendering of High Street façade, with 27 High Street at left

Further, portions of the proposed building lie within 100 feet of this district, meaning that the entire development is subject to review for general compatibility "with the major character-defining elements of the…portion of the district in the immediate vicinity" *(Section 14-526(d)5).* The applicant has provided a narrative which speaks to the compatibility of the proposed building with the context, writing "[t]he proposed project creates a bridge between the commercial brick buildings of the Old Port and the wood residential buildings of the West End. While the functions of the building are divided vertically [(]commercial space at level 1 and residential space on the upper levels[)], the architecture is divided by the Old Port and West End" (*Attachment Q).*" They state, "[a]t the corner of York Street and High Street, the building…utilizes residentially scaled materials and colors similar to buildings of the West End. These facades are details [sic] in a more ornate fashion with historically proportioned trim, storefont details and cornice."

Deb Andrews, the city's Historic Preservation Manager, presented the preliminary drawings to the Historic Preservation Board for an advisory review on October 21, 2015. In her final comments on the drawings, which incorporate the feedback of the Historic Preservation Board, Ms. Andrews writes that "Historic Preservation Board members found that the revised design proposal was much improved from the initial proposal and responsive to many of the concerns and suggestions expressed by the board in its preliminary review" *(Attachment 6).* She notes two outstanding issues, including the absence of a residential entrance on the York or High Street elevations and a request for a continuation of the blond brick material to the ground floor of the corner building element. She also notes that the "[b]oard was not in a position to comment on the finer elements or features of the design given the fact that the submitted drawings do not include wall sections or details." Staff has requested these materials through the design review.

f. Exterior Lighting

The applicant has provided a lighting plan specifying the city's Eastern Waterfront fixtures on the York and High Street frontages and decorative pole-mounted lights at the building's rear. All of these lights are full cutoff and meet the requirements of the city's Technical Manual.

The applicant also proposes wall-mounted sconces on the York and High Street building façades that are designed as architectural lighting. These lights are not technically full cutoff. Per the code, any "architectural lighting" would need to meet *Technical Manual* standards, which include the provision that "[architectural] lighting shall be directed downward unless the development is located in an area of the city where uplighting is permitted" *(14-526(D)6b* and *Technical Manual Section 12.4).* In the final submittal, the applicant has provided specifications showing that each of the two architectural lights are downward directed. Both Historic Preservation staff and the city's urban designer have reviewed the architectural lights and indicated their general approval.

The final photometric plan shows an average illumination level slightly exceeding the *Technical Manual* standard, as well as some light trespass to the north onto both adjacent properties on Danforth Street and some trespass onto 27 High Street *(Plan 17)*. The applicant has requested lighting standard waivers. With regard to light trespass, it should be noted that two of the adjacent properties are owned by the applicant, and the applicant has provided a letter from the third property owner attesting to his comfort with the proposed lighting *(Attachment V)*. Given the location of the relevant property lines near building and parking entrances, where adequate lighting is important, staff supports the lighting waivers.

g. Noise and Vibration

The applicant has not provided information on noise from HVAC and mechanical equipment in the final submittal. The applicant has requested that this be treated as a condition of approval.

h. Signage and Wayfinding

No signage or wayfinding is proposed at this time. A final signage and wayfinding plan is included as a condition of approval.





Figures 9 and 10: Rendering of corner of York and High Streets (top); York Street elevation (bottom)

i. Zoning-Related Design Standards

The city's site plan ordinance states that "Development in the B3, B5, B5-b, B7 business zones and in the B6 and EWPZ waterfront zones shall be designed to support the development of dense, mixed-use neighborhoods with attractive, safe and convenient street level

pedestrian environments as demonstrated by compliance with all applicable design standards listed in the *Design Manual*" (*Section 14-526(d)9.a(iii)*). The *Design Manual* establishes design guidelines for the B-3 zone. The applicant has provided a brief narrative responding to the design guidelines *(Attachment Q).*

It should be noted that, following the workshop on this proposal, the applicant met on multiple occasions with staff to discuss changes to the building design. Ultimately, the applicant modified building materials, façade composition and fenestration patterns, roof lines, and entry design in an attempt to address staff concerns. The resulting drawings generally show a contextual building with rational façade composition, articulation at the base plane, and shifts in massing which help to mitigate its scale.

Caitlin Cameron, the city's urban designer, has provided final comments from the design review *(Attachment 1)*. This review finds that, generally, the standards of the B-3 Downtown Urban Design Guidelines have been met. The outstanding items from the design review include:

- *Materials and detailin*g – Specific details on the design of elements meant to provide articulation, including wall sections and details of storefronts, cornices, and entrances and window and door specifications, have not been provided;
- *Blank facades* – The project employs low seasonal landscaping on the blank area of the High Street façade. Raised planters previously shown in this location, which helped to mitigate the effect of the unarticulated wall, have been eliminated;
- *Pedestrian amenities* – Seating walls on York and planter walls on High Street have been removed from the final plans. These were desirable elements that added amenity to the project; and
- *Standards for increasing the setback beyond the build-to line* - As discussed above.

A condition of approval has been suggested to address these outstanding design items.

XIII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the planning board approve the proposed mixed-use development at 101 York Street.

XIV. PROPOSED MOTIONS

A. FINDING REGARDING B-3 BUILD-TO LINE

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 December 8, 2015 for application 2015-139 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the planning board hearing, the Planning Board **finds/does not find** that the proposed building setback of greater than 5 feet on York Street complies with the requirements of *Section 14-526(d)9* in that it:

(a) Provides substantial and viable publicly accessible open space or other amenity at the street level that supports and reinforces pedestrian activity and interest;
(b) Does not substantially detract from the prevailing street wall character;
(c) Does not detract from existing publicly accessible open space; and,
(d) Is of high quality and character of design and of acceptable orientation to solar access and wind impacts as to be attractive to pedestrian activity.

The planning board **approves/does not approve** additional setback per *Section 14-220(c) on the condition that the applicant shall provide revised plans including amenities and insuring public access in areas of increased setback for review and approval by the city's urban designer prior to the issuance of a building permit.*

B. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the planning board report for the public hearing on December 8, 2015 for application 2015-139 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 transportation engineer's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual* standard *(Section 1.7.2.7)* which requires that long arterials and collectors, minimum acceptable spacing between multiple driveways on adjacent lots shall be 100 feet on streets with a speed limit of 25 mph or less., that substantial justice and the public interest are secured with the proposed variation in this standard, and that the variation is consistent with the intent of the ordinance. The planning board **waives/does not waive** the *Technical Manual* standard *(Section 1.7.2.7)* to allow the separation on York Street as shown on the plans, on the condition, proposed by the consulting transportation engineer, that *the applicant revise the plans to narrow the adjacent driveway to the east to 20 feet with the intent of minimizing the driveway separation prior to the issuance of a building permit*;

2. The planning board **finds/does not find**, based on the Planning Authority's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual* standard *(Section 12.2)* requiring that the average illumination level on a site not exceed 1.25 footcandles and that the illumination level at the property line not exceed .1 footcandle, that substantial justice and the public interest are secured with the proposed variation in this standard, and that the variation is consistent with the intent of the ordinance. The planning board **waivers/does not waive** the *Technical Manual* standard *(Section 12.2)* to allow illumination levels as proposed in the photometric plan *(Plan 17)*;

3. The planning board **finds/does not find** that the applicant has demonstrated that site constraints prevent the planting of all required street trees in the right-of-way. The planning board **waives/does not waive** the site plan standard (*Section 14-526 (b) (iii)* requiring one street tree per unit for multi-family development and concludes that the applicant shall contribute $4,400 to Portland's tree fund.

C. SUBDIVISION

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the planning board report for the public hearing on December 8, 2015 for application 2015-139 relevant to the subdivision regulations; and the testimony presented at the planning board hearing, the planning board finds that the plan **is/is not** in conformance with the subdivision standards of the land use code and **approves/does not approve** the application, subject to the following conditions of approval, which must be met prior to the signing of the plat:

1. The applicant shall finalize the subdivision plat for review and approval by Corporation Counsel, the Department of Public Services, and the Planning Authority;
2. Prior to Certificate of Occupancy, the applicant shall provide condominium documents for review and approval by Corporation Counsel; and
3. The applicant shall provide drafts of all necessary easements, including but not limited to:
    a. A public access easement for areas of the sidewalk not in the right-of-way;
    b. Access, utility, and maintenance easements from 27 High Street to 101 York Street (for areas including a proposed bioretention cell, a proposed fire lane, and patio);
    c. Utility and construction easements from 78 Danforth Street to 101 York Street;
    d. Access easement from 60 Danforth Street to 101 York Street, 78 Danforth Street, and 27 High Street;
    e. Utility easement from 60 Danforth Street to 101 York Street and 78 Danforth Street;
    f. Utility easement to 78 Danforth Street from 101 York Street;

g. A construction easement from 75 York Street;

h. A grading easement, as necessary, from 60 Danforth Street; and

i. A drainage easement from the city for the storm drain located in the right-of-way

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;

D. DEVELOPMENT REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on December 8, 2015 for application 2015-139 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. The applicant shall provide a copy of the Notice of Intent to Comply with the Maine Construction General Permit;
2. The applicant shall provide a revised construction management plan for review and approval by the city's Department of Public Works and Planning Authority;
3. The applicant shall provide a revised plan set addressing the comments of the city's consulting traffic engineer *(Attachment 2),* including:
    a. Reconfigured handicap ramps at the corner of York and High Streets;
    b. Replacement of the existing mast arm structure and supporting equipment; and
    c. A parking plan with dimensions noted;
4. The applicant shall provide a revised plan set eliminating the brick crosswalk in the driveway apron or obtain a change in sidewalk material policy from City Council for review and approval by the Department of Public Works;
5. The applicant shall provide a pavement marking plan for review and approval by the city's Department of Public Works;
6. The applicant shall provide a revised plan set addressing the comments of the city arborist *(Attachment 5)* and consulting civil engineer, including:
    a. Bioretention cell plantings meeting the design guidelines of the Maine DEP;
    b. Curbing in areas adjacent to pavement;
    c. Raised tree planters or tree grates as specified on York Street;
    d. The elimination of the street tree on York Street closest to High Street;
    e. Modified street tree species; and
    f. Additional screening on the Danforth Street frontage;
7. The applicant shall amend the stormwater report to clarify the proposed filter surface area and identify the annual reporting requirements per Chapter 32 of the city Code of Ordinances for review and approval by the city's consulting civil engineer;
8. The applicant shall revise the utility plans to include:
    a. A structure designated for capture, storage, and removal of oil and grit from the parking facility and

b. A sewer connection detail

for review by the city's Department of Public Works;

9. The applicant shall obtain final approval from Historic Preservation for proposed improvements to the property at 27 High Street for review and approval by the Planning Authority;
10. Prior to Certificate of Occupancy, the applicant shall provide documentation that HVAC and mechanical equipment meet applicable city standards for review and approval by the Planning Authority;
11. Prior to Certificate of Occupancy, the applicant shall provide a signage and wayfinding plan for review and approval by the Planning Authority;
12. The applicant shall provide:
    a. Wall sections and details showing storefronts, cornices, and entrances;
    b. Specifications for windows and doors;
    c. Revised plans to differentiate the blank wall on the High Street façade;

    for review and approval by the city's Planning Authority;
13. The applicant shall provide a sewer capacity letter for review and approval by the Planning Authority; and
14. The final plan set shall be reviewed and approved by the city's Fire Prevention Bureau.

XIV. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. Design review (memo from Caitlin Cameron, 11/25/15)
2. Traffic Engineer review (memo from Thomas Errico, 12/3/15)
3. Civil Engineer review (memo from David Senus, 11/24/15)
4. Department of Public Services review (memo from David Margolis-Pineo, 12/2/15)
5. City Arborist review (memo from Jeff Tarling, 11/25/15)
6. Historic Preservation review (memo from Deb Andrews, 12/3/15)

APPLICANT'S SUBMITTALS

A. Level III Site Plan application
B. Project Description
C. Evidence of Right, Title, and Interest
D. Evidence of State and/or Federal Permits
E. Compliance with Applicable Zoning Requirements
F. Proposed Easements
G. Requested Waivers
H. Financial and Technical Capacity
I. Traffic Studies
J. Significant Natural Features
K. Narrative Describing the Site
L. Stormwater Management Report
M. Consistency with Master Plans
N. Availability of Off-Site Facilities
O. Solid Waste
P. Fire Code Summary
Q. Design Narrative
R. HVAC Narrative
S. Neighborhood Meeting Minutes
T. Wind Analysis

U. Response to Preliminary Comments
V. Supplemental Lighting Information

PLANS

Plan 1. Cover Sheet
Plan 2. Boundary Survey
Plan 3. New Division of Lots
Plan 4. Subdivision Plan
Plan 5. Demolition Plan
Plan 6. Overall Site and Utility Plan
Plan 7. Site and Utility Plan
Plan 8. Grading, Drainage, & Erosion Control Plan
Plan 9. Details - 1
Plan 10. Details - 2
Plan 11. Bio-Cell Plan and Details
Plan 12. Erosion Control Notes
Plan 13. Hardscape Plan and Details
Plan 14. Hardscape Plan and Details
Plan 15. Landscape Plan Commercial
Plan 16. Landscape Plan Residential
Plan 17. Lighting and Photometric Plan
Plan 18. Lighting Specifications
Plan 19. Floor Plan 1
Plan 20. Floor Plan 2
Plan 21. Floor Plan 3-5
Plan 22. Exterior Building Elevations
Plan 23. Color Elevations High and York Streets
Plan 24. Color Elevations Danforth Street
Plan 25. Building Section and Roof Plan
Plan 26. Rendering – York Street looking west
Plan 27. Rendering – York and High
Plan 28. Rendering – from across York
Plan 29. Soil Boring Location Plan
Plan 30. Construction Management Advance Site Work
Plan 31. Construction Management Foundations
Plan 32. Construction Management Steel & Plank Erection
Plan 33. Construction Management Masonry & Site Work

Planning and Urban Development Department
Planning Division

Subject: B3 Design Review – 101 York Street

Written by: Caitlin Cameron, Urban Designer

Date of Review: Wednesday, November 25, 2015

A design review according to the *City of Portland Design Manual* Standards was performed for the revised plans for 101 York Street. The final plans were reviewed by Caitlin Cameron, Urban Designer, Nell Donaldson, Planner, and Shukria Wiar, Planner, Planning Division of the Department of Planning & Urban Development with additional coordination with Deb Andrews, Historic Preservation Program Manager. The project was reviewed against the B-*3 Downtown Business Zone Standards* and *Downtown Urban Design Guidelines* (Appendix 1 of the Design Manual).

Design Review Criteria:
The project must meet all B-3 Design Standards found in the *City of Portland Design Manual*.

Findings of the Design Review:
The proposed design currently **does not pass** all of the standards of the *B-3 Downtown Business Zone Standards* and *Downtown Urban Design Guidelines* (Appendix 1 of the Design Manual) – please refer to comments below regarding Standards currently not met. Conditions of approval may be needed to resolve these outstanding design items.

B-3 Downtown Urban Design Guidelines (Appendix 1)

I. Relationship to the Pedestrian Environment

A. Distinguish the lower 35 feet of building facades

1. **Storefronts and building facades**

- Relationship to Context – Met – The existing context is primarily residential on High Street and primarily commercial/industrial brick buildings further on York Street. Therefore, the mixed-use building is a unique condition. The building meets the intent of the B-3 by placing an active storefront ground floor for a majority of the York Street façade. The High Street elevation transitions with the grade change and landscaping to the more residential context – the primary residential entrance is accessed from High Street on the side of the building.
- Pedestrian character – Met – The storefronts are placed to be accessible and visible from York Street.
- Materials and detailing – Not Met –

- The project materials include brick, granite, fiber cement, and aluminum storefront. Durable and "heavy" materials such as

granite and brick are placed at the base of the building to ground the building and provide a sense of permanence and durability.
- Storefront base is emphasized with trim details and soldier courses.
- Articulation details such as cornices, belt lines, and water tables are used. Awnings and lighting are also indicated at the storefronts. Specific details on the design of these treatments, including wall sections and details of storefronts, cornices, and entrances and window and door specifications have not been provided.

- Transparency – Met –

- Contemporary design – Not applicable – There is no surrounding retail context

2. **Building entrances**

- Compatibility with the building façade – Met –

- Prominence along the street – Met – Retail entrances will be prominent along York Street with canopies and lighting for emphasis. The garage entrance on York Street will be indicated with a canopy, lighting, and sidewalk materials. The principal residential entrance is not very prominent on the street – to improve the visual cues for the entrance the applicant is proposing to provide landscaping, a corner marquee, and a post.

- **Access to the street –Met–** Street-level retail will be directly accessible from York Street. A garage entrance directly from York Street is also provided. The applicant has elected not to place the primary residential entrance on High Street due to the existing topography.

- **Accessibility – Met –**

3. **Blank Facades – Not Met –** The project employs low seasonal landscaping on the blank area of the High Street façade. Raised planters previously shown in this location, which helped to mitigate the scale of the unarticulated wall, have been eliminated.
4. **Special Features – Not applicable –**

B. Pedestrian Activities District (PAD) – **Not applicable –**

C. Sidewalk Areas and Open Space – Met – The project appears to follow traditional material and technical standards.

D. Pedestrian Amenities – Not Met – Seating walls on York and planter walls on High Street have been removed from the final plans – these were desirable elements that added amenity to the project. Landscaping at residential entrances, plaza, and sidewalk furnishing zone is appropriate.

E. Sidewalk Vendors and Sidewalk Cafes – There is potential for outdoor dining on York Street but is dependent on tenancy.

F. Urban Open Spaces – see II.B.

II. Relationship to Existing Development

A. Integrate with, respect and enhance – **Met** – *Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the Downtown, surround building environment and streetscape.*

1. **Street walls and building setbacks – Met –** The proposed building setback on High Street does follow the pattern of the block.
2. **Open Space – Not applicable –**

3. **Building form, scale and massing – Met –** The proposed project is a large building with a long façade on York Street. This length is mitigated through the use of a base/middle/top composition, an articulated storefront base, roofline variation, and shifts in the building massing.
4. **Building façade proportion and composition – Met –** *In the design of larger buildings it is particularly important to examine opportunities to compose the building both horizontally and vertically, respecting the character of buildings nearby through a contextually sensitive design while creating an interesting and creative individual building. . . . Further, buildings Downtown frequently have a horizontal composition characterized by regular window openings set within distinctive bay spacing.*
    - Bay spacing is consistent – clear building systems, prevailing patterns, and a hierarchy.
    - Fenestration patterns create a sense of rhythm and scale to the building horizontally and vertically with consistent window spacing, types, and sizes.
    - Articulation details such as cornices, belt lines, and water tables are used.
5. **Pedestrian circulation and building entrances – Met –** Potential entrances are indicated on the York Street façade but remain dependent on future tenancy. Entrances will be emphasized with canopies/awnings and lighting.
6. **Parking garages and surface lots –Met –** The garage entrance on York is clearly indicated and does not dominate the frontage.
7. **Areas within downtown – Not applicable –**

B. Standards for increasing setback beyond street build-to-line – **Not Met** – *In order for proposed exceptions to this pattern of predominant street wall to be acceptable, the applicant must demonstrate to the Planning Board that the introduction of additional setbacks at the street level satisfies the following:*

1. *Open space and amenity* – **Not Met** – The current plan shows an ornamental fence around the proposed additional setback which removes public access to the widened sidewalk. The plan no longer includes a seating wall which was considered an amenity to the space. Outdoor seating may occur in the space but is dependent on tenant.
2. *Prevailing character and continuity* – **Met** – No discontinuity is created with the setback, however, there is a pinch point created with the corner of the building.
3. *Support for existing open space* **– Not applicable –**
4. *Quality and orientation* – **Met** – The space created by the additional setback has good solar access and is visible and accessible from the public sidewalk.

III. Roof-Top Appurtenances – Met - Rooftop appurtenances appear to be screened by the building parapet.

IV. Shadow Impact on Open Space – Not applicable – As of 9/21/15 no portion of the building is in excess of 65' in height.

V. Wind Impacts – Met – Applicant provided a wind impact analysis letter dated 10/20/15.

VI. Setback from Existing Structures – Met – New development does not appear to impact the structural integrity or general safety of neighboring structures.

VII. Building Tops – **Not applicable** – As of 9/21/15 no portion of the building or structure exceeds 150' in height.

VIII. View Corridors, Visual Landmarks, and Gateways

A. **View Corridors** – **Met –** High Street is a protected view corridor. The building is not deemed to substantially obstruct views to the water.
B. **Visual Landmarks – Not applicable –**
C. **Gateways – Met –** The site is identified as an existing significant Gateway *High Street* and *The Million Dollar Bridge to York Street . . . there are opportunities to enhance these entrances by preserving view corridors and panoramic skyline views along or from these corridors, reinforcing and enhancing the scale, character and placement of buildings along these entrance routes . . . Proposals for development along Gateway entrances to the Downtown are encouraged to examine and reinforce the unique character and opportunity of that gateway entrance in terms of the design and siting of buildings, land uses, and streetscape improvements.*
    - The building placement at the corner meets the standard. The design emphasizes the corner through increased height, the use of storefront that wraps the corner, and the façade composition is symmetrical at the corner which will often be encountered at an oblique angle.

IX. Signage/Awnings/Canopies – **Met –** Potential signage, awnings, and canopies are indicated on the York Street façade but remain dependent on future tenancy. No other building signs are proposed.

Att. 2

From: Tom Errico <thomas.errico@tylin.com>
To: Helen Donaldson <HCD@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>
Date: 12/3/2015 8:31 AM
Subject: 101 York Street - Final Traffic Comments

Nell - The following summarizes my final traffic comments as a status update of prior comments.

1. The York Street design needs to be revised to meet the City's Complete Streets Policy. The following notes specific items for considerations

* The design should provide for a consistent horizontal alignment between High Street and Maple Street.
Status: The plans have been extended to Maple Street and in general the alignment is acceptable. As noted below, the applicant shall submit a final pavement marking plan for review and approval.

* York Street should include bicycle lanes - although a shared-use facility is likely on the eastbound approach at High Street.
Status: The plan has been revised to include bicycle lanes on both sides of York Street with a shared lane configuration approaching High Street. The City standard for a bicycle lane width abutting on-street is 6 feet or a bicycle buffer be provided. Additionally, the termination of the bicycle lane in the eastbound directions needs to have a formal transition. It is recommended that the applicant submit a final pavement marking layout design plan for review and approval by the City.

* On-street parking is acceptable - assuming it can fit with other cross-section needs.
Status: The on-street parking layout is acceptable.

* The dedicated right-turn lane into the site should be eliminated.
Status: The noted lane has been eliminated and I have no further comment.

* The radius on the northeast corner of the High Street/York Street intersection should be considerate of a possible conversion of High Street to two-way flow.
Status: The applicant has provided an Auto-Turn template using a Bus as the design vehicle and when assuming lane encroachment, the proposed radius will be compatible with a two-way conversion. I have no further comment.

* The project should include replacement of the existing traffic signal mast arm structure at the northeast corner of the High Street/York Street intersection.
Status: The applicant shall replace the existing mast arm structure and supporting equipment and relocate the structure to a location that meets ADA and MUTCD requirements. The existing support is old and given that the corner area is being reconstructed, this is the time for replacement. I would note that site plan requirements for upgrading traffic signal equipment is typical for projects of significant scope and traffic generation, as proposed. Final details of the revised traffic signal shall be provided for review and approval.

* All crosswalks and sidewalk ramp configurations should be clearly illustrate such that ADA compliance can be determined. Detectible warning panels need to be provided at all public street crossings.
Status: The applicant shall revise the handicap ramp layout on the corner of High Street and York Street such that two distinct ramps are provided - the preferred ADA layout configuration. Final designs plans shall be provided for review and approval.

* The plan needs to show how vehicle lanes transition east of the site to Maple Street.
Status: The plans have been extended to Maple Street and in general the alignment is acceptable. As noted above, the applicant shall submit a final pavement marking plan for review and approval.

2. The applicant has conducted a trip generation analysis for the project site that indicates the site will generate less than 100 trips when credit for prior uses is included. The applicant should provide specific information regarding the prior uses such that double counting of trips is not occurring. This is relevant as it relates to the need for a Traffic Movement Permit.
Status: The applicant has provided the requested information and the project does not require a Traffic Movement Permit. I have no further comment.

3. The applicant should conduct a safety analysis of crash information for York Street and Danforth Street and at the High Street intersections with York Street and Danforth Street.
Status: The applicant has provided safety data for the study area and I concur that there are no identified High Crash Locations. I have no further comment.

4. I have reviewed the parking analysis and concur that an adequate parking supply will be provided for the project (with an excess supply).

Status: I have no further comment.

5. I find the design of the parking levels generally to be acceptable with the following comments.

* Compact parking spaces are slightly larger than City standards. I support a waiver from the City's technical standards.
Status: I have no further comment

* One circulation lane is 21 feet wide and does not meet City standards. I support a waiver from the City's technical standards.
Status: Given that the subject circulation aisle is not used for parking maneuvers, I find conditions to be acceptable and a waiver from the City's technical standards is not required.

* The driveway width at York Street should be dimensioned on the plan.
Status: The proposed driveway will be 21 feet wide and meets City standards. I have no further comment.

* The layout of the parking level accessed via Danforth Street should be provided for review and approval.
Status: The applicant has provided a plan of the layout, but dimensions are not provided. If the layout meets City dimensional requirements, I have no further comment (the applicant should provide documentation of dimensions).

* The applicant should note whether the driveway on Danforth Street meets City driveway separation standards. While conditions currently exist, bringing the driveway into conformance may be desired.
Status: The adjacent driveway to the east shall be relocated (or closed) at the time of redevelopment to meet City driveway separation standards or the applicant can relocate or close the driveway now prior to Danforth Street becoming a moratorium street due to a future paving resurfacing project.

6. I have reviewed the construction management plans and need to continue to review, particularly as it relates to sidewalk closures and detours.
Status: I find the applicant requests to review specific details prior to a building permit to be acceptable.

New Comments

* The driveway on York Street does not meet City driveway separation standards. The applicant shall narrow the adjacent driveway to the east to 20 feet with the intent of maximizing driveway separation. I support a waiver from the City's Technical standards following this change.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
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MEMORANDUM

TO: Nell Donaldson, Planner
FROM: David Senus, PE
DATE: November 24, 2015
RE: York & High Development, Level III Site Plan Application

Woodard & Curran has reviewed the response to comments and Final Level III Site Plan Application for the proposed mixed use development located at 101 York Street in Portland, Maine. The project involves the construction of a five story mixed use building and a two level 207 space parking structure.

Documents Reviewed by Woodard & Curran

- Stormwater Management Report, dated November 3, 2015, prepared by Gorrill Palmer.
- Erosion and Sediment Control Report, dated November 3, 2015, prepared by Gorrill Palmer.
- Engineering Plans, dated November 13, 2015, prepared by Gorrill Palmer on behalf of JB Brown & Sons.

Comments

1) The project will disturb more than one acre of area and the Applicant has noted that the proposed project will require a Notice of Intent to Comply with the Maine Construction General Permit. When submitted, a copy of this NOI filing should be forwarded to the City Planning Office for the project record.
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 general accordance with Appendix A, B, & C of MaineDEP Chapter 500.
   b) General Standard: The project will result in a net increase in impervious area of approximately 1,236 square feet. As such, the project is required to provide stormwater quality control for an impervious area equal to or greater than the amount of new impervious area. The Applicant has proposed to treat 2,658 SF of existing impervious area with a bioretention cell. This is an acceptable approach to managing stormwater quality; however, the Applicant should address the following comments:
      - Table 5 of the Stormwater Management Report indicates that the proposed Filter Surface Area is 18,992 SF; this number appears to be incorrect and should be clarified.
      - It appears that trees and larger buffer/screening plantings (bushes) are proposed within the bioretention cell; some of these plantings are not allowable per MaineDEP BMP design guidance. The planting plan should be coordinated with the civil plans.
   c) Flooding Standard: The project will result in a net increase in impervious area of approximately 1,236 square feet. As such, the project is required to include stormwater management features to control the rate of stormwater runoff from the site. Systems such as the proposed bioretention cell provide an acceptable means of managing the rate of stormwater discharge from the site. As noted in the Application, a significant portion of stormwater runoff will now be separated from the combined sewer and will discharge to the newly installed drainage system in High Street. We find this project approach to provide an acceptable means of compliance with the Flooding Standard.
3) The stormwater inspection and maintenance plan should identify the annual reporting requirements per Chapter 32 of the City of Portland Code of Ordinances.
4) Sheet C4.01 includes a note stating that Casco traps shall be installed on stormdrains outletting from catch basins in the parking garage to act as an oil/water separator. Casco traps are a typical

requirement for all catch basins connected to the City's storm drain or combined sewer system; however, the City requires that a separate structure designed for capture, storage and removal of oil and grit be provided for enclosed parking facilities. The City has accepted proprietary oil/water separators, or in-line manhole structures with sumps and inverted pipes on the outlet to provide for separation and capture of oil and grit. Exact requirements should be coordinated with DPW.

5) The Applicant has proposed 80 linear feet of 12" storm drain pipe between DMH 1 and DMH2 within the High Street Right-of-Way, below the sidewalk. The Applicant should consider relocating this storm drain closer to the building and within the property limits, or, if acceptable to the City, an easement or agreement will be necessary between the property owner and the City to identify the maintenance responsibilities for this infrastructure.

From: David Margolis-Pineo
To: Barbara Barhydt; Helen Donaldson
CC: DEVELOPMENT REVIEW GROUP
Date: 12/2/2015 2:23 PM
Subject: Final Review Comments for 101 York St.

Comments also entered into Urban Insight.

December 2, 2015

Memo To: Nell Donaldson
Barbara Barhydt
From: David Margolis-Pineo
Re: 85 & 101 York Street – Mixed-Use Commercial/Tenant Space

The Department of Public Services has the following Final Review comments for the above mentioned project.

1. A Demolition and Seal Drain Permit will be required for this project. Also any work within the street right of way will require a Street Opening Permit.
2. Add note to plans stating, "All work within the road right of way shall meet City of Portland Technical Manual Standards."
3. A new stormwater sewer was recently installed in High Street through the York/High intersection. The City can forward upon request, the as-built plans and any updated pipe invert elevations so the applicant can show on their plans.
4. The City requires wastewater laterals 8" and larger be connected to manholes. In this case with a 36" oval brick sewer, core drilling or connecting into an existing manhole is preferred. More direction may be forth coming from John Emerson who heads up the City's Sewer Maintenance Division. 318-0239 Please be aware that the City requires a backflow preventer on all proposed laterals connecting to a combined sewer.
5. Can the drainage system shown in the High St sidewalk be placed on the applicant's property? If not, a drainage easement from the City is required.
6. A pedestrian access easement will be needed from the applicant for the public to use the sidewalk on York St.
7. Asphalt drive aprons are required in this area of the City. The applicant is requested to eliminate the proposed brick crosswalk across the drive apron.

We have no further comments at this time.

Att. 5

From: Jeff Tarling
To: Helen Donaldson
Date: 11/25/2015 3:23 PM
Subject: Re: 101 York Street landscape
Attachments: Tplanter.JPG; TreePlanter.pdf; R-8811.pdf; r-8810.jpg; R-8810.pdf

Hi Nel -

I have reviewed the landscape plan for the proposed 101 York Street project and offer the following comments & conditions:

a) York Street - 'Street-trees' : The 2 street-trees next to the 'on-street' parking, should include 'Neenah' R-8811 tree grates 72" x 48" or the R-8810 if the sidewalk space is too narrow. The tree to the east and the two to the west or High Street side should be in raised tree planters, see city standard spec attached. The street tree closest to High Street should be removed to improve visibility near the busy intersection. The third tree back close to the on-street parking should be placed in a raised planter that includes the 'bump-out' shifting the tree slightly to the right, tree #2 from High Street needs to shift slightly away from the pinch point, perhaps +/- 8' towards High Street.

Street Tree types - Condition of approval, alternatives

The proposed 'Green Vase' Zelkova street trees along York Street should be switched to 'Mussahino' Columnar Zelkova to have less interference
to building and traffic. See: http://www.jfschmidt.com/articles/musashino/

For salt tolerance reasons the 'Green Mountain' Sugar Maple would ideally be switched to a 'Karpick' Red Maple.

b) Interior landscape - this area contains a mix of trees, shrubs and ornamental grasses, herbaceous plants. Landscape planting next to pavement should be protected by curbing unless part of the stormwater feature.

c) Danforth Street view - Additional planting / screening is recommended on the Danforth Street frontage. This would be the area to the right of the Danforth Street driveway. This might be place for something like the 'Satelite' Bosnian Pine or Swiss Stone Pine...

>>> Helen Donaldson 11/25/2015 11:06 AM >>>
See attached.

Thanks for your help, Jeff.

Nell

NOTES:

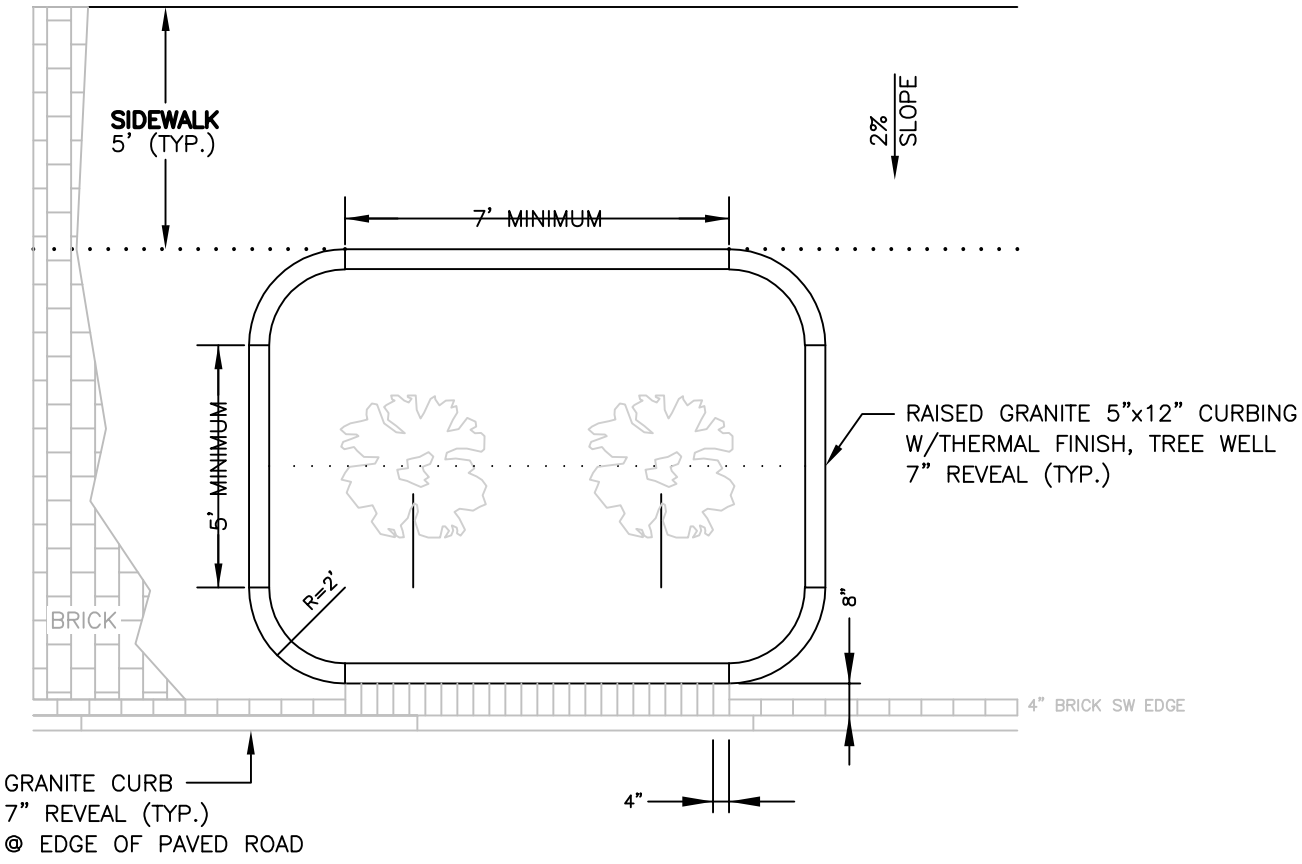
ALL TREE WELLS SHALL COMPLY WITH CITY TECHNICAL STANDARDS AND MUST BE APPROVED BY THE CITY ARBORIST.

GRANITE CURB TREE WELL SHALL BE ...

SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

NEW CONSTRUCTION:
4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA.
LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

REPAIR /MAINTENANCE TO EXISTING BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS.
SPECIFICATION NUMBER: "VERMONT BACKER BRICK", ITEM NUMBER # VBBB



PLAN VIEW

TREEWELL IN BRICK SIDEWALK

NOT TO SCALE

DATE: FEB. 2013 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	**TRANSPORTATION SYSTEMS AND STREET DESIGN** SECTION V	FIGURE:
	LARGE GRANITE BORDER TREE WELL IN BRICK SIDEWALK WITH NO ESPLANADE		V-??D

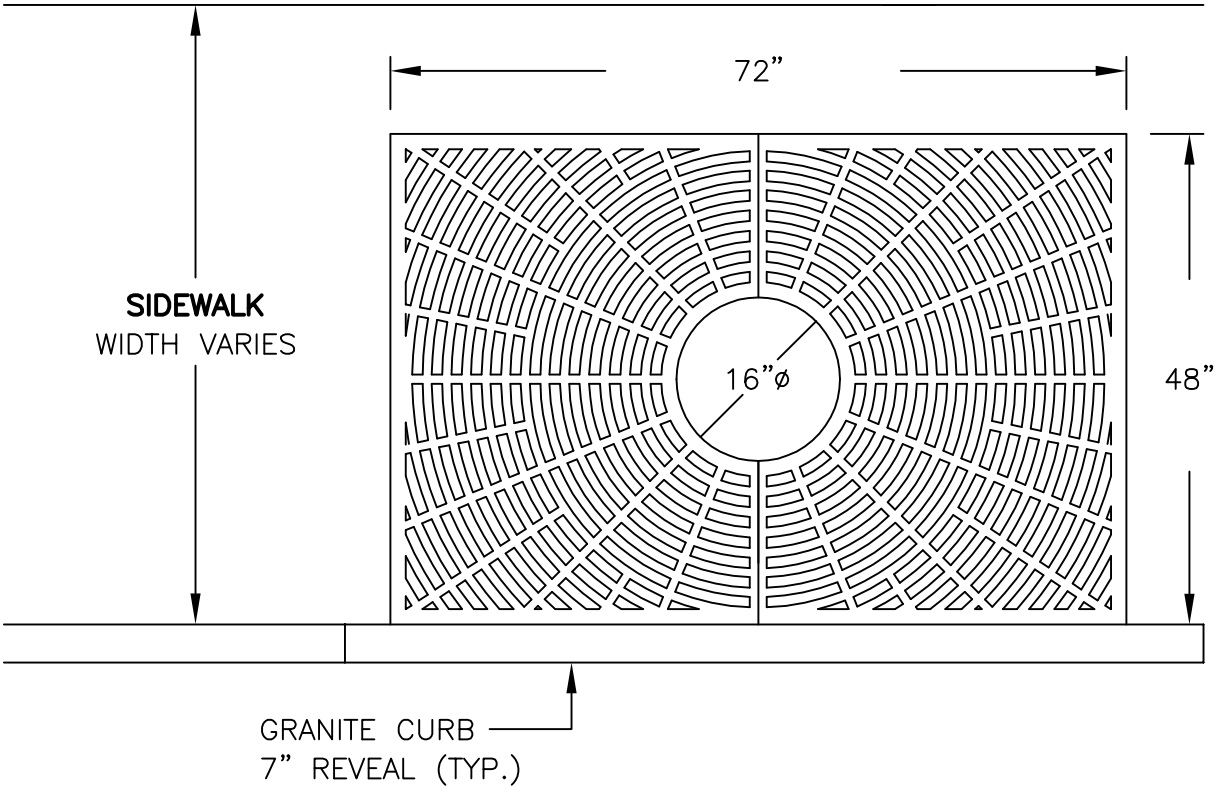


NOTES:

16"ø EXPANDABLE TREE OPENING. 0.375" SLOT OPENINGS.
12"ø AND 22"ø TREE OPENINGS AVAILABLE.

SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

WHEN THE TREE GRATE IS INSTALLED IN A CONCRETE SIDEWALK, A NOTCH MUST BE INSTALLED ALONG THE EDGE TO HOLD THE GRATE, WHEN INSTALLED IN A BRICK SIDEWALK IT REQUIRES A FRAME TO BE INSTALLED TO HOLD THE GRATE IN PLACE.



PLAN VIEW

EXPANDABLE TREE OPENING
NEENAH MODEL R-8811

NOT TO SCALE

http://www.nfco.com/literature/TreeGrateCatalog22/Boulevard.pdf

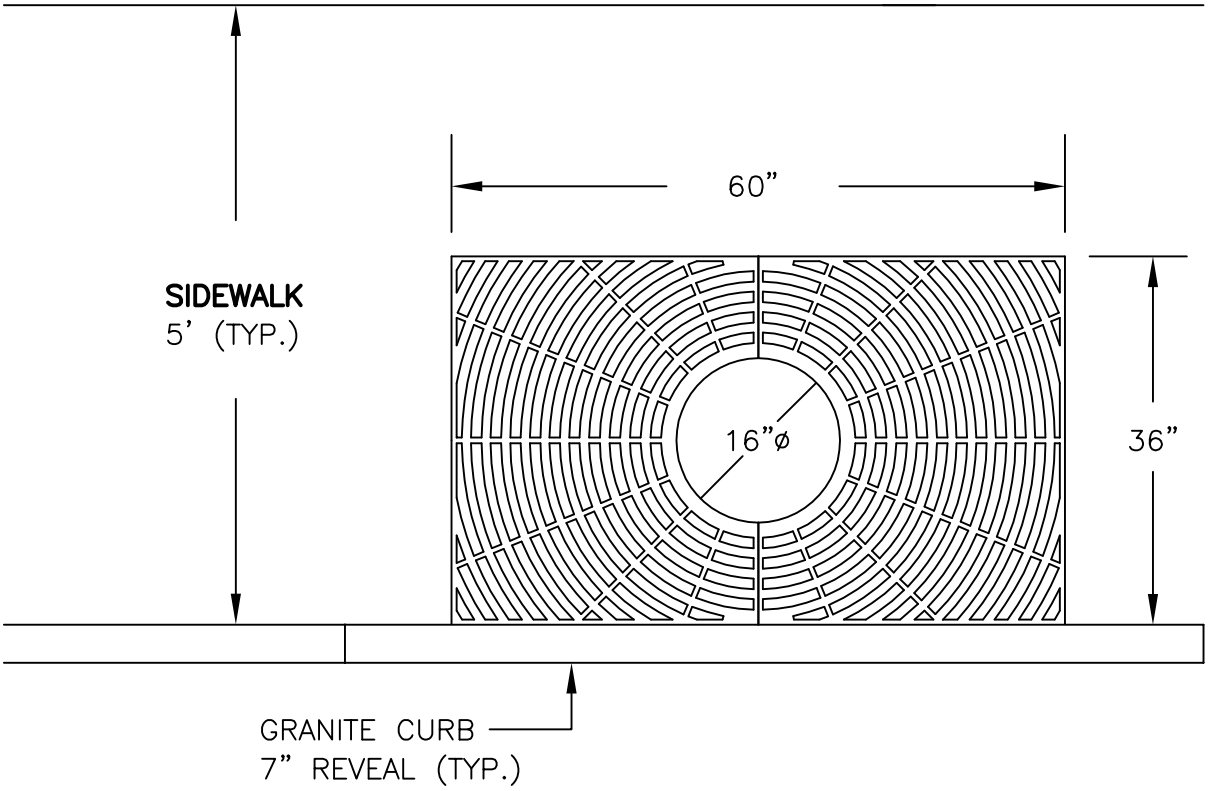
DATE: MARCH 2011 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	**STDS FOR LANDSCAPING AND PRESERVATION OF EXISTING VEGETATION** SECTION IV	FIGURE: IV-4B
	EXPANDABLE TREE GRATE FOR WIDER URBAN STREETS		

NOTES:

16"ø EXPANDABLE TREE OPENING. 0.25" SLOT OPENINGS.

SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

WHEN THE TREE GRATE IS INSTALLED IN A CONCRETE SIDEWALK, A NOTCH MUST BE INSTALLED ALONG THE EDGE TO HOLD THE GRATE, WHEN INSTALLED IN A BRICK SIDEWALK IT REQUIRES A FRAME TO BE INSTALLED TO HOLD THE GRATE IN PLACE.



PLAN VIEW

EXPANDABLE TREE GRATE
NEENAH MODEL R-8810

NOT TO SCALE

http: //www.nfco.com/literature/TreeGrateCatalog22/Avenue.pdf

DATE: MARCH 2011 REVISED:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	**STDS FOR LANDSCAPING AND PRESERVATION OF EXISTING VEGETATION** SECTION IV	FIGURE: IV-4A
	EXPANDABLE TREE GRATE FOR NARROW RESIDENTIAL URBAN STREETS		

Memorandum
Department of Planning and Development
Historic Preservation Office

To: Chair Boepple and Members of the Planning Board

Cc: Nell Donaldson, Planner
Stuart O'Brien, Planning Division Director
Caitlin Cameron, Urban Designer

From: Deborah Andrews, Historic Preservation Program Manager

Date: December 3, 2015

Re: Proposed 101 York Street Development – Analysis of Compatibility with Adjacent Portion of West End Historic District

As required under Sec. 14-526.5.b of the site plan ordinance, developments located within 100 feet of a designated landmark or historic district boundary must be found by the Planning Board to be "generally compatible with the major character-defining elements of the portion of the district in the immediate vicinity of the proposed development". To assist the Planning Board in its deliberations, the site plan standard requires that Historic Preservation staff provide a written analysis of the proposed development's immediate context. For major projects abutting historic district boundaries it has been the custom for staff to forward the design proposal to the Historic Preservation Board for its review and advisory comment.

On October 21, the Historic Preservation Board conducted its advisory review of the proposed development at 101 York Street. It should be noted that the HP Board's review was based on the preliminary plans first presented to the Planning Board on October 13. The staff report for the HP Board's October 21 meeting, which describes the context of the development and presents comments for consideration, is attached to this memo. Please see the applicant's preliminary drawings and computer-generated views attached to the 10/21 staff report— these are the drawings upon which the Historic Preservation Board's comments were based.

During their advisory review session, Historic Preservation Board members raised a number of concerns about the design as proposed. Chief among the concerns was the absence of a residential entrance on either of the building's main facades. In the Board's view, providing a prominent residential entrance on High or York was not only important from a functional perspective, it would also provide an architectural focus and sense of orientation for the building.

They noted that the composition of the York Street façade seemed to call out for an entrance in the center bay, making its absence all the more curious. Board members also raised questions and concerns about the pattern and variety of fenestration on the three building sections and noted that the windows on the easternmost section on York Street were oddly short and square in proportion. They also suggested that introducing projecting elements such as pilasters, belt courses and/or shallow bays, as well as recessed elements such as setting the windows back from the surface of the building, would provide more architectural interest to the building. Regarding the basic composition of three building sections, Board members suggested that the middle section (shown in black brick) should be set back from the plane of the two abutting building sections to provide a break and rational basis for the change in exterior finish. Finally, with respect to material choices, the Board questioned the quality of and rational for the cement fiber material shown at the base of the blond brick section at the corner of High and York. Rather than introduce a new material that attempted to simulate a traditional wood storefront, they suggested that the brick be brought down to the ground level, with granite for the base and trim details—similar to the treatment shown on the other building sections.

Pursuant to the October 21 workshop with the Historic Preservation Board and a follow-up meeting with Planning and Historic Preservation staff, the project architects submitted various revised design proposals for staff review and comment.

Final Design Proposal

Although the Historic Preservation Board has not formally reviewed the applicant's final design proposal, staff distributed copies of the drawings at a recent meeting for the Board's informal comment. As the drawings had evolved considerably since the Historic Preservation Board's October workshop, it seemed appropriate to invite additional feedback from Board that might be incorporated in this memo. Historic Preservation Board members found that the revised design proposal was much improved from the initial proposal and responsive to many of the concerns and suggestions expressed by the Board in its preliminary review. The two outstanding issues identified by the Board were the absence of a residential entrance on the York or High Street elevations and the material shown at the ground level of the blond building element. The Board was not in a position to comment on the finer elements or features of the design given the fact that the submitted drawings do not include wall sections or details. Obviously, the design, detailing and execution of contributing architectural features will be important to the success of the overall project.

Attachments

1. 10/21/15 HP staff report and applicant's preliminary design proposal

HISTORIC PRESERVATION BOARD
CITY OF PORTLAND, MAINE

WORKSHOP – ADVISORY REVIEW and COMMENT
NORTHEAST CORNER OF HIGH AND YORK STREETS

TO: Chair Benson and Members of the Historic Preservation Board

FROM: Deb Andrews, Historic Preservation Program Manager

DATE: October 15, 2015

RE: October 21, 2015 **Workshop – Advisory Review and Comment on Proposed New Construction Immediately Abutting Historic District**

Note: This workshop was originally scheduled for the 10/7/15 agenda, but was postponed to the 10/21/15 agenda.

Address: 101 York Street (northeast Corner of High and York Streets)

Applicant: J. B. Brown & Sons

Design/Build Contractor: Opechee Construction Corporation

Introduction

Wednesday's advisory review of J.B. Brown's proposed mixed-use development at the corner of York and High Streets was originally scheduled for the Historic Preservation Board's October 7 agenda, but was postponed to the October 21 agenda. As J. B. Brown's proposal has not been modified since their original submission, Board members should refer to 10/7 staff report in preparation for Wednesday's meeting—see Attachment 4. This memo is intended to highlight supplemental materials received since the writing of that report.

As noted in the 10/7 staff report, the applicant was asked to provide additional materials to aid in the Board's review, specifically additional perspective views of the proposed development shown within its surrounding context and from various vantage points. If more detailed elevations are available at this stage in design development, staff asked that those drawings be provided as well. In response to this request, the applicant has provided additional perspective views—see Attachment 1. The applicant has also forwarded screen shots of the presentation made to the Planning Board at their initial workshop that explain the rationale behind project architect's design concept.

Also attached as supplementary information is a memo prepared by Urban Designer Caitlin Cameron for the Planning Board's October 13th workshop. As the development site is located

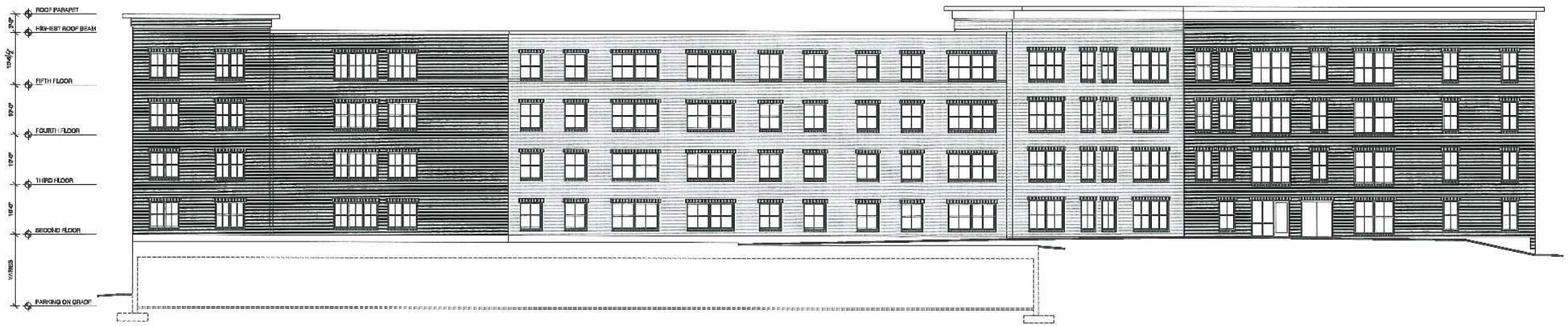
within the B3 zone, the project is subject to the design review standards applicable in that zone. Ms. Cameron provides a preliminary analysis of the project's compliance with the B3 design standards.

As noted in the 10/7 staff report, the Board's role in this review is advisory only and is intended to provide additional assistance to the Planning Board as they consider whether the proposed development is "generally compatible with the major character-defining elements of the portion of the district in the immediate vicinity of the proposed development". The portion of the development of greatest relevance to the Historic Preservation Board is that portion closest to the High Street boundary of the West End Historic District. That said, Planning Board members expressed reservations about some aspects of the proposed design at their preliminary workshop and indicated that they welcomed input from the Historic Preservation Board not only on the question of compatibility with the project's immediate abutting historic context, but also on the project's general design direction as currently proposed.

Attachments

1. Perspective views of proposed project
2. Print-out of applicant's presentation on proposed design approach
3. 10/21/15 design review memo prepared by Urban Designer Caitlin Cameron
4. Staff report for 10/7/15 Historic Preservation Board meeting

© Copyright 2015 Opechee Construction Corporation



4 PARKING DECK EXTERIOR ELEVATION
3/32" = 1'-0"



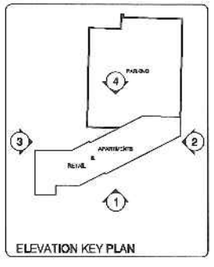
3 HIGH STREET EXTERIOR ELEVATION
3/32" = 1'-0"



2 SIDE YORK STREET EXTERIOR ELEVATION
3/32" = 1'-0"



1 YORK STREET EXTERIOR ELEVATION
3/32" = 1'-0"



ELEVATION KEY PLAN

Monday, August 17, 2015 11:21:14 AM

OPECHEE CONSTRUCTION CORPORATION
11 CORPORATE DRIVE ▪ BELMONT, NH 03220
PHONE (603) 524-8833 ▪ WWW.OPECHEE.COM

A1.5

Mixed Use Development

York & High Street
Portland, Maine

REVISION:

ISSUED:
08-14-15 SITE PLAN REVIEW

project architect: KK
drawn by: DQ

EXTERIOR BUILDING ELEVATIONS

sheet number:
C9.01

Att. 6



Perspective View from York Street

September 03, 2015

© COPYRIGHT

Proposed Mixed Use Development

Portland, Maine

OPECHEE CONSTRUCTION CORPORATION

Perspective View from the corner of York Street and High Street

September 03, 2015

Proposed Mixed Use Development

Portland, Maine

© COPYRIGHT

OPECHEE CONSTRUCTION CORPORATION

PROPOSED DEVELOPMENT



YORK & HIGH STREET
MIXED USE DEVELOPMENT
85 & 101 YORK STREET

SITE PLAN/SUBDIVISION APPLICATION

August 14th, 2015

Table of Contents

General Submissions per Section 14-527 (c)

1. Application forms
2. Application fees
3. Project description
4. Evidence of right, title and interest
5. Evidence of state and/or federal approvals
6. Compliance with applicable zoning requirements
7. Existing and or proposed esements, covenant, rights-of-ways or other burdens
8. Requests for waivers
9. Financial and Technical Capacity
10. Boundary Survey

Final Written Materials per Section 14-527 (f)

1. Construction Management Plan
2. Traffic Study
3. Significant natural features
4. Narrative describing the site
5. Stormwater runoff calculations
6. Developments consistency with City Master Plans
7. Evidence of Utility Capacity to Serve
8. Solid Waste
9. Code summary per NFPA 1 and Fire Dept. Standards
10. Consistency with Design Standards
11. Verification HVAC meets state and federal emissions requirements

Appendix

- One full size plan set (sheet C0.00 through C10.04)
- One reduced 11x17 plan set (sheets C0.00 through C10.04)

The following material has been prepared to address the written statement requirements of the City of Portland Site Plan Review Ordinance identified in Section 14-527(c) and (f)of the Land Use Ordinance and to provide additional information required by the City of Portland Development Review application requirements.

Owner:
J.B. Brown & Sons
c/o Vin Veroneau
36 Danforth Street
Portland, ME 04101
Phone: (207) 774-5908
Email: veroneau@jbbrown.com

Applicant:
101 York Street, LLC
c/o Vin Veroneau
36 Danforth Street
Portland, ME 04101
Phone: (207) 774-5908
Email: veroneau@jbbrown.com

Note: Evidence of the owner's and applicant's right, title, and interest in the property is included in Section 4 of the General Submissions

Design/Build Firm/Architect/Authorized Agent:
Opechee Construction Corporation
c/o Barry Stowe
11 Corporate Drive
Belmont, NH 03220
Phone: (603) 527-9090
Email: barrys@opechee.com

Civil Engineer:
Gorrill-Palmer
c/o Al Palmer
PO Box 1237, 15 Shaker Road
Gray, Maine 04039
(207) 657-6910
Email: APalmer@gorrillpalmer.com

Landscape Architect:
Elm Grove Property Solutions, LLC
c/o Kerry Schleyer
1910 Elm St.
Manchester, NH 03104
Phone: (603) 232-0428
Email: kerryschleyer@me.com

J.B. Brown & Sons
PO Box 207, 36 Danforth Street
Portland, ME 04112

August 6, 2015

Re: Permitting Authorization Letter
Mixed-Use Building & Parking Garage
85-101 York Street

To whom it may concern,

Opechee Construction Corporation and its employees are hereby authorized to submit applications, related plans and documents, and to appear before any boards/committees and other officials, with respect to obtaining development approvals for a proposed mixed-use building and parking garage at 85-101 York Street, Portland, Maine.

Sincerely,

Land Owner: J.B. Brown & Sons
Vincent P. Veroneau, President

Applicant: 101 York Street, LLC
Vincent P. Veroneau, manager

GENERAL SUBMISSIONS

1. **Application forms**

- Letter of authorization from J.B. Brown & Sons and 101 York Street, LLC
- The Site Plan Development Review Application has been completed and is attached.
- The City of Portland Wastewater Capacity Application is attached.
- Historic Preservation Application for Certificate of Appropriateness

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

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. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are ***paid in full*** to the Inspections Office, City of Portland Maine by method noted below:

☐ Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐ Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☒ I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

Applicant Signature: _____ Date: 08-17-2015

I have provided digital copies and sent them on: _____ Date: 08-17-2015

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.

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) 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
(207) 874-8719

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

Updated: June 1, 2015

PROJECT NAME: York Street Mixed Use Building

PROPOSED DEVELOPMENT ADDRESS:

85 - 101 York Street

PROJECT DESCRIPTION:

Proposed 5-story mixed-use building and a two level 207 space parking structure.

Flexible commercial space on the first floor and condominiums on the upper floors

CHART/BLOCK/LOT: 40/C/ 3, 4, 5, 9,18, 22, 25, 33 & High Court St.

PRELIMINARY PLAN n/a (date)
FINAL PLAN 08-14-2015 (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: 101 York Street, LLC c/o Vincent Veroneau Business Name, if applicable: Address: PO Box 207, 36 Danforth Street City/State : Portland, ME Zip Code: 04112	**Applicant Contact Information** Work # (207) 774-5908 Home# Cell # Fax# (207) 774-0898 e-mail: veroneau@jbbrown.com
Owner – (if different from Applicant) Name: J.B. Brown & Sons c/o Vincent Veroneau Address: PO Box 207, 36 Danforth Street City/State : Portland, ME Zip Code: 04112	**Owner Contact Information** Work # (207) 774-5908 Home# Cell # Fax# (207) 774-0898 e-mail: veroneau@jbbrown.com
Agent/ Representative Name: Opechee Construction Corporation c/o Barry Stowe Address: 11 Corporate Drive City/State : Belmont, NH Zip Code: 03220	**Agent/Representative Contact information** Work # (603) 527-9090 Cell # e-mail: barrys@opechee.com
Billing Information Name: Opechee Construction Corporation c/o Geoff Gray Address: 11 Corporate Drive City/State : Belmont, NH Zip Code: 03220	**Billing Information** Work # (603) 527-9090 Cell # Fax# (603) 527-9191 e-mail: geoffg@opechee.com

Engineer	Engineer Contact Information
Name: Gorrill-Palmer Consulting Engineers c/o Al Palmer Address: PO Box 1237, 15 Shaker Road City/State : Gray, ME Zip Code: 04039	Work # (207) 657-6910 Cell # Fax# e-mail: APalmer@gorrillpalmer.com
Surveyor	**Surveyor Contact Information**
Name: Owen Haskell, Inc. c/o John Schwanda Address: 390 US Route 1 City/State : Falmouth, ME Zip Code: 04105	Work # (207) 774-0424 Cell # Fax# (207) 774-0511 e-mail: jschwanda@owenhaskell.com
Architect	**Architect Contact Information**
Name: Opechee Construction Corporation c/o Keith Kelley Address: 11 Corporate Drive City/State : Belmont, NH Zip Code: 03220	Work # (603) 527-9090 Cell # Fax# (603) 527-9191 e-mail: keithk@opechee.com
Attorney	**Attorney Contact Information**
Name: Verrill Dana L.L.P. c/o David L. Galgay, Jr., Partner Address: One Portland Square City/State : Portland, ME Zip Code: 04112	Work # (207) 774-4000, x4514 Cell # Fax# e-mail: dgalgay@verrilldana.com

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)

Level III Development (check applicable reviews)

___ Less than 50,000 sq. ft. ($500.00)
_X_ 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 $300,00 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 ($40.00 hour)
- Legal Review ($75.00 hour)

Third party review fees are 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)
_X_ Stormwater Quality ($250)
_X_ Subdivisions ($500 + $25/lot)
# of Lots ___ x $25/lot = _____
___ Site Location ($3,000, 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
_X_ Historic Preservation

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal

2. **In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.**

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. **One (1) full size site plans** that must be **folded.**
2. One (1) copy of all written materials or as follows, unless otherwise noted:
   a. Application form that is completed and signed.
   b. Cover letter stating the nature of the project.
   c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

APPLICANT SIGNATURE:

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:
Kurt P. Vernon	8/5/15

PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	Parcel: 72,930 sq. ft.
Proposed Total Disturbed Area of the Site	77,510 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)	64,836 sq. ft.
Impervious Area (Total Proposed)	66,072 sq. ft.
Building Ground Floor Area and Total Floor Area	
Building Footprint (Total Existing)	6,075 sq. ft.
Building Footprint (Total Proposed)	17,505 sq. ft.
Building Floor Area (Total Existing)	11,650 sq. ft.
Building Floor Area (Total Proposed)	97,565 sq. ft.
Zoning	
Existing	B-3
Proposed, if applicable	n/a
Land Use	
Existing	Restaurant, parking, office
Proposed	Flexible mixed-use commercial
Residential, If applicable	
# of Residential Units (Total Existing)	0
# of Residential Units (Total Proposed)	63
# of Lots (Total Proposed)	1
# of Affordable Housing Units (Total Proposed)	0
Proposed Bedroom Mix	
# of Efficiency Units (Total Proposed)	0
# of One-Bedroom Units (Total Proposed)	19 (31%)
# of Two-Bedroom Units (Total Proposed)	40 (63%)
# of Three-Bedroom Units (Total Proposed)	4 (6%)
Parking Spaces	
# of Parking Spaces (Total Existing)	
# of Parking Spaces (Total Proposed)	211
# of Handicapped Spaces (Total Proposed)	8
Bicycle Parking Spaces	
# of Bicycle Spaces (Total Existing)	14
# of Bicycle Spaces (Total Proposed)	20 (33 required - see waiver)
Estimated Cost of Project	Approximately $18 Million

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 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);	
		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 - 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
T.B.D.		1	* Application fees
X		1	* Written description of project
X		1	* Evidence of right, title and interest
n/a		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
X		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
X		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
X		1	Stormwater management plan and stormwater calculations
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
X		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;	
n/a		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;	
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;	
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;
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;
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;
n/a		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
T.B.D.		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

2. Application fees

Once the application has been delivered to the Building Inspections Office, Opechee Construction Corporation intends to call the Inspections Office within 48 hours and confirm the total application fee amount. Then J.B. Brown & Sons will deliver the payment in the form of a check to the Inspections Office, City Hall, 3rd Floor, Room 315.

3. Project Description

101 York Street, LLC (a subsidiary company of J.B. Brown & Sons) is proposing a mixed-use development at the corner of York Street and High Street in the B-3 zone. The proposal is a 5-story building that will provide approximately 17,000 sq.ft. of flexible commercial on the first floor and 63 residential apartments on the upper 4 floors. Also, the development will include a 2-level parking structure with 211 total spaces in the back of the 5-story structure. All parking in the garage will be owned by the applicant and will be shared parking for tenants.

The project will redevelop several existing City parcels under the common ownership of J.B. Brown & Sons. The owner will consolidate the existing lots and provide a new division of lots for the redevelopment. The redevelopment will raze two existing buildings, paved & gravel parking, curb cuts, patio areas, and landscaping. As it relates to parking, 95 existing parking spaces will be redeveloped into 211 parking spaces for a net increase of 30 spaces in excess parking on the subject property.

The proposed development has frontage on York Street, High Street, Danforth Street and Maple Street. The lower level garage will have access through the mixed-use building to an existing curb cut off York Street. The upper level parking in the garage will have access from an existing curb cut and new driveway off Danforth Street. In addition, the new driveway off from Danforth Street will be shared with the existing multifamily residence at 78 Danforth Street. 78 Danforth will release their rights over the private way known as High Street Court. It should be noted that project will remove (2) existing curb cuts on York Street and (1) curb cut on High Street in the post-development condition.

The redevelopment proposal will provide significant streetscape improvements along York Street and at the intersection with High Street. Improvements will include, but not limited to, building exterior, brick sidewalks, granite curbing, curb ramps, street trees and landscaped planters. In addition, the project will provide improvements to the existing infrastructure such as a majority of stormwater runoff will now be separated from the sewer and discharged to the newly installed drainage in High Street. Also, several existing overhead electric services will be removed and the new project services will be underground.

Also, the project provides some site improvements on the 27 High Street parcel in the R-6 zone and within the Historic District. These improvements will be related to hardscape and landscape only as the existing multi-family residences will share a proposed patio space with the new condominiums.

Easements are being proposed with the abutters located 78 Danforth Street and 75 York Street. The project requires the temporary access rights for construction and permanent access rights for shared utilities and driveways.

4. Evidence of right, title and interest

The record owner of the subject property is J B Brown & Sons. Deeds granting the subject property to the applicant are the following:

- Book 4842 Page 336; 66-68 Danforth Street; Tax Lot 40-C-3 & 4
- Book 4156 Page 65; 60 Danforth Street; Tax Lot 40-C-5 & 9
- Book 34531 Page 339; 11 High Street Court; Tax Lot 40-C-18
- Book 27156 Page 179; 85 York Street; Tax Lot 40-C-25
- Book 24127 Page 341; 13 High Street Court; Tax Lot 40-C-33
- Book 24372 Page 292; 27 High Street; Tax Lot 40-C-21
- Book 26143 Page 287; 101 York Street; Tax Lot 40-C-22

A copies of all the deeds are attached.

4842/336

QUITCLAIM DEED
With Covenant
Corporate Grantor

40-C-3,4
66-68 Danforth

Know all Men by these Presents,

That DORSE CORPORATION, sometimes known as THE DORSE CORPORATION,

a Corporation organized and existing under the laws of the State of Maine

and having a place of business at Portland

in the County of Cumberland and State of Maine,

in consideration of One Dollar ($1.00) and other valuable consideration,

paid by J. B. BROWN & SONS, a Corporation organized and existing under the laws of the State of Maine and having a place of business at said Portland

whose mailing address is 482 Congress Street, Portland, Maine

the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey,

and forever quitclaim unto the said J. B. BROWN & SONS, its successors and assigns forever,

~~heirs and assigns forever~~

A certain lot or parcel of land, with the buildings thereon, situated on the southeasterly side of Danforth Street in said Portland, bounded and described as follows: Beginning at a stake standing on the northeasterly corner of land formerly owned by the late William Merrill; thence southeasterly adjoining said Merrill's land about 102 feet to a lane; thence on said lane 47 feet; thence running parallel with said Merrill's land about 102 feet to Danforth Street; thence by said Danforth Street 47 feet to the bounds first mentioned.

Also, another certain lot or parcel of land situated on the southeasterly side of Danforth Street in said Portland, being bounded and described as follows: Beginning on the southeasterly side of said Danforth Street at the northeasterly corner of land formerly of Michael F. Flaherty, being the parcel hereinabove described; thence running southeasterly by the parcel hereinabove described 102 feet, more or less, to the northwesterly line of High Street Court; thence running northeasterly by the northwesterly line of High Street Court to the intersection of the northwesterly line of High Street Court and the southwesterly line of a right of way known as Palermo Road; thence running northwesterly by the southwesterly line of said Palermo Road 102 feet, more or less, to the southeasterly side of Danforth Street; thence running southwesterly by the southeasterly side of said Danforth Street to the northeasterly corner of the parcel first hereinabove described and the point of beginning.

Being the same premises conveyed to the Grantor by Mark Slotsky by Deed dated September 5, 1972 and recorded in the Cumberland County Registry of Deeds in Book 3293, Page 21.

This conveyance is made subject to real estate taxes of the City of Portland for the municipal tax year July 1, 1981 through and including June 30, 1982.

337

40-C-3, 4
66-68 Danforth

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to the said J. B. BROWN & SONS, its successors and assigns forever.

~~And~~ **And** the said Grantor Corporation does ~~covenant~~ covenant with the said J. B. BROWN & SONS, its successors and ~~assigns~~ that it will ~~warrant and defend~~ warrant and defend the premises to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said DORSE CORPORATION has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Dorothy C. DeCosta, its President thereunto duly authorized, this 25th day of the month of August A.D. 19 81.

Signed, Sealed and Delivered in presence of

DORSE CORPORATION
(Corporate Name)

By Dorothy C. DeCosta
Its President

State of Maine, County of Cumberland ss. August 25, 1981

Then personally appeared the above named Dorothy C. DeCosta, President of said Grantor Corporation as aforesaid, 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,

Justice of the Peace
Notary Public
Attorney at Law

AUG 26 1981

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 4:35 P.M. and recorded in
BOOK 4542 PAGE 336

4156/65

4156/65

40-C-5,9

Leo Danforth St.

Know all Men by these Presents,

That MAINE NATIONAL BANK, a national banking association created and existing under the laws of the United States of America and having its principal place of business in Portland in the County of Cumberland and State of Maine,

a corporation existing under the laws of the State of Maine and having its principal place of business in Portland in the County of Cumberland and State of Maine,

in consideration of One Dollar ($1.00) and other valuable considerations

paid by J. B. BROWN & SONS, a corporation created and existing under the laws of the State of Maine and having its principal place of business in Portland in the County of Cumberland and State of Maine,

the receipt whereof it does hereby acknowledge, does hereby grant, release, bargain, sell and convey, and forever quit-claim unto the said J. B. Brown & Sons, its successors

heirs and assigns forever,

a certain lot or parcel of land together with the buildings thereon situated in Portland in the County of Cumberland and State of Maine and bounded and described as follows:

Beginning at the interesection of the southeasterly sideline of Danforth Street and the southwesterly sideline of Maple Street;

Thence southeasterly by the southwesterly sideline of Maple Street one hundred thirteen and forty hundredths (113.40) feet, more or less, to land now or formerly of James E. McBrady & Son, Inc.;

Thence southwesterly by said McBrady land to a corner thereof;

Thence southeasterly by said McBrady land eighty-seven and seven hundredths (87.07) feet, more or less, to a corner thereof and the northwesterly sideline of York Street;

Thence southwesterly by said northwesterly sideline of York Street two hundred fifteen and twelve hundredths (215.12) feet, more or less, to land now or formerly of Joseph S. Pio;

Thence northwesterly by said Pio land one hundred fifty-two and forty hundredths (152.40) feet, more or less, to a corner thereof;

Thence southwesterly by said Pio land seventy-five (75) feet, more or less, to a corner thereof;

Thence continuing southwesterly by the southeasterly or rear line of the premises conveyed to Mailmark Corp. by deed of Margaret F. Costello dated January 6, 1964 and recorded in the Cumberland County Registry of Deeds in Book 2796, Page 483 to a corner thereof;

Thence northwesterly by the southwesterly sideline of said Mailmark land to said southeasterly sideline of Danforth Street;

Thence northeasterly by said southeasterly sideline of Danforth Street to the point of beginning.

Being the same premises conveyed to Inn Green, Inc., by Mailmark Corp. by deed, dated June 8, 1973 and recorded in said Registry of Deeds in Book 3[illegible] Page 322.

Also another certain lot or parcel of land together with any buildings thereon situated in Portland in the County of Cumberland and State of Maine and bounded and described as follows:

Beginning on the southeasterly sideline of Danforth Street at the most westerly corner of the property conveyed by Mailmark Corp. to Inn Green, Inc. by deed, dated June 8, 1973 and recorded in said Registry of Deeds in Book 3[illegible] Page 322.

60 Danforth St. 40-C-5

Thence southwesterly by said southeasterly sideline of Danforth Street to Palermo Road, so-called, and sometimes known as King Place;

Thence southeasterly by the northeasterly sideline of Palermo Road one hundred two (102) feet, more or less, to an angle therein and continuing southeasterly by said sideline twenty-five and sixteen hundredths (25.16) feet, more or less, to a corner thereof formed by its intersection with the southeasterly sideline of High Street Court;

Thence southwesterly by said southeasterly sideline of High Street Court thirty-one and eighty hundredths (31.80) feet, more or less, to an angle therein and continuing southwesterly by said sideline thirty and thirty hundredths (30.30) feet, more or less, to land believed to be now or formerly of Maurice A. Libby and Patricia C. Libby;

Thence southeasterly by said Libby land one hundred forty-seven (147) feet, more or less, to land believed to be now or formerly of Cities Service Corp;

Thence northeasterly by said Cities Service Corp. land twenty-nine and eighty-one hundredths (29.81) feet, more or less, to land believed to be now or formerly of Josephine M. Pellett;

Thence on the following courses by said Pellett land:

Northwesterly fifty-four and fifteen hundredths (54.15) feet, more or less, to a corner thereof;

Thence northeasterly nine and sixty-eight hundredths (9.68) feet, more or less, to a corner thereof;

Thence northwesterly fifteen (15) feet, more or less, to a corner thereof;

Thence northeasterly thirty-eight and fifty-two hundredths (38.52) feet, more or less, to a corner thereof;

Thence southeasterly one hundred twenty-four and ninety-five hundredths (124.95) feet, more or less, to the northwesterly sideline of York Street;

Thence by said northwesterly sideline of York Street northeasterly thirty-four and thirty hundredths (34.30) feet, more or less, to land now or formerly of Joseph S. Pio;

Thence by the southwesterly sideline of said land of Joseph S. Pio northwesterly one hundred fifteen (115) feet, more or less, to an angle therein and continuing northwesterly by said sideline sixty-six and ninety-three hundredths (66.93) feet, more or less, to a corner thereof;

Thence by the property conveyed by Neilmark Corp. to Inn Crowd, Inc. by deed, dated June 8, 1973 and recorded in said Registry of Deeds in Book 3406, Page 322 southwesterly to a corner thereof and thence northwesterly by said property to the southeasterly sideline of Danforth Street and the point of beginning.

Being the same premises conveyed to Inn Crowd, Inc. by Neilmark Corp., by deed, dated June 8, 1973 and recorded in said Registry of Deeds in Book 3406, Page 325.

Meaning and intending to convey and hereby conveying the same premises conveyed to Maine National Bank by Inn Crowd, Inc. by mortgage deed, dated January 23, 1976 and recorded in said Registry of Deeds in Book 3798, Page 127. Said mortgage was foreclosed by Maine National Bank and sold to Maine National Bank pursuant to a Judgement of Foreclosure and Sale entered in the Cumberland County Superior Court, located in Portland, Maine on July 1, 1977. Said deed to Maine National Bank was dated November 9, 1977 and recorded in said Registry of Deeds in Book 4130, Page 21.

60 Danforth St 40-C-5

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to the said J. B. Brown & Sons, its successors ~~HEIRS~~ and Assigns forever.

And the said Grantor Corporation does covenant with the said J. B. Brown & Sons, its successors ~~HEIRS~~ and Assigns, that it will **Warrant** and **Forever Defend** the premises to the said Grantee, its successors ~~HEIRS~~ and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said Maine National Bank has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Robert H. Harris, Jr., its Vice President thereunto duly authorized, this thirtieth day of December in the year one thousand nine hundred and seventy-seven.

Signed, Sealed and Delivered
in presence of

MAINE NATIONAL BANK

By _____
Its Vice President

(Corporate Seal)

State of Maine, Cumberland } ss. December 30, 19 77.

Personally appeared the above named Robert H. Harris, Jr., Vice President of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me,

_____
~~CHRISTOPHER THE PEACE~~
Notary Public.

DEC 30 1977

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at _____ M. and recorded in
Book _____ Page _____

40-C-18
11 High St. Ct.

72239 Bk:24581 Pg: 339

QUITCLAIM DEED WITH COVENANT
(Maine Statutory Short Form)

KNOW ALL PERSONS BY THESE PRESENTS that I, Richard D. Cawley, a resident of Baldwinsville, County of Onondaga and State of New York, for consideration paid, GRANT to J. B. Brown & Sons, a Maine corporation, whose mailing address is 482 Congress Street, P.O. Box 207, Portland, Maine 04112, with QUITCLAIM COVENANTS, the land in Portland, County of Cumberland and State of Maine, bounded and described as follows:

PLEASE SEE SCHEDULE A ATTACHED HERETO AND MADE A PART HEREOF

IN WITNESS WHEREOF, the said Richard D. Cawley has caused this instrument to be signed and sealed this 30th day of October, 2006.

Witness

Richard D. Cawley

State of New York
County of Onondaga ss.

October 30, 2006

Personally appeared the above named Richard D. Cawley and acknowledged the foregoing to be his free act and deed.

Before me,

JOHN M. DELANEY
Notary Public, State of New York
Qualified in Onon. Co. No. 34-4511724
My Commission Expires 10/31/09

Notary Public/Attorney at Law
Print Name: John M. DeLaney
Commission expires:

MAINE REAL ESTATE TAX PAID

40-C-18

11 High St. Ct.

[illegible] 23239 BK 24531 Pg 340

SCHEDULE A

A certain lot or parcel of land, with the buildings thereon, situated on the southeasterly side of High Street Court in said City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on said southeasterly side of said High Street Court at the northerly corner of land formerly of Bessie O. Farley; thence running northeasterly by said High Street Court, sixty-three and five tenths (63.5) feet to land conveyed by Chella M. Kelley to William W. Gallagher, et al, by deed dated September 8, 1944 and recorded in the Cumberland County Registry of Deeds in Book 1757, Page 70; thence southeasterly by said Gallagher land, one hundred forty-three and seven tenths (143.7) feet, more or less, to land formerly of Dugan; thence southwesterly by said Dugan land and land formerly of Bradley, sixty-eight and eight tenths (68.8) feet, more or less, to land formerly of Jacobs; thence northwesterly by said Jacobs land, land formerly of Holland and said Farley land, one hundred forty-three and one-half (143-1/2) feet, more or less, to High Street Court at the point of beginning.

Being the same premises conveyed by Richard D. Cawley, Domiciliary Foreign Personal Representative of the Estate of Steven Lee Cawley, deceased (testate), to Richard D. Cawley by Deed of Distribution by Personal Representative and recorded in the Cumberland County Registry of Deeds at Book 24141, Page 29, also being the same premises conveyed by Michael D. Athearn and Deborah J. Bell to Steven Lee Cawley by warranty deed dated March 16, 1979 and recorded in the Cumberland County Registry of Deeds at Book 4393, Page 98.

Received
Recorded Register of Deeds
Nov 02,2006 11:03:35A
Cumberland County
John B OBrien

40-C-25

Doc#: 47529 Bk:27156 Pg: 179

poa desc.

QUITCLAIM DEED WITH COVENANT

MAINE REAL ESTATE TAX PAID

KNOW ALL PERSONS BY THESE PRESENTS, that **ANTHONY P. MEZOIAN,** of South Portland, County of Cumberland, State of Maine, and **ANTHONY P. MEZOIAN,** Trustee, **ANN L. MEZOIAN FAMILY TRUST,** Article 5, u/t/a dated February 14, 2008, each the holder of a fifty percent (50%) tenant-in-common interest, for consideration paid, grant to **J.B. BROWN & SONS, a Maine corporation** with a mailing address of 36 Danforth Street, P.O. Box 207, Portland, Maine 04112 with QUITCLAIM COVENANT that certain real property located in **Portland, Maine** more particularly described in Schedule A annexed hereto and incorporated by reference herein.

MEANING AND INTENDING to describe and convey, and hereby conveying, the same premises conveyed (i) to Anthony P. Mezoian and Ann Lee Mezoian, as joint tenants, by Warranty Deed from Josephine M. Newlander dated November 17, 1978 and recorded in the Cumberland County Registry of Deeds in Book 4842, Page 296, and (ii) to Anthony P. Mezoian in his capacity as Trustee of the Ann L. Mezoian Family Trust Article 5, u/t/a dated February 14, 2008, by Deed of Distribution by Personal Representative (Testate) from Anthony P. Mezoian in his capacity as the duly appointed and acting personal representative of the Estate of Ann L. Mezoian, dated April 14, 2009 and recorded in said Registry of Deeds in Book 27063, Page 81.

WITNESS my hand and seal this 5th day of August, 2009.

WITNESS

Anthony P. Mezoian

Anthony P. Mezoian, both in his individual capacity and as Trustee of the Ann L. Mezoian Family Trust Article 5, u/t/a dated February 14, 2008

SCHEDULE A

A certain lot or parcel of land with the buildings thereon, situated on the northerly side of York Street in said Portland, and bounded and described as follows:

Beginning on the northerly side line of said York Street at a point distant thirty- four and three tenths (34.3) feet southwesterly from easterly corner of Catherine Clary's lot purchased of John B. Brown in 1873; thence northwesterly upon a line drawn parallel to and distant three (3) inches from the northeasterly side of the house formerly standing on the lot hereby conveyed to land now or formally of one King; thence southwesterly by said King land to land now or formerly of one Fagan; thence southeasterly by said Fagan's land and land now or formerly of one McQuade to said York Street; thence northeasterly by said York Street sixty-seven and one-third (67 1/3) feet to the first bound.

STATE OF MAINE
CUMBERLAND, SS

August 5th, 2009

Personally appeared before me the above-named Anthony P. Mezoian and acknowledged the foregoing to be his free act and deed.

Notary Public/Attorney at Law
Printed Name: David Galgay
My commission expires: / /

Received
Recorded Register of Deeds
Aug 05,2009 10:37:47A
Cumberland County
Pamela E. Lovley

24127/341

Doc#: 41727 Bk:24127 Pg: 341

40-C-33
13 High St. Ct.

WARRANTY DEED

KNOW ALL BY THESE PRESENTS, THAT BETH GIDEON, of Sammamish, Washington (the "Grantor"), in consideration of One Dollar ($1.00) and other good and valuable consideration paid by J.B. BROWN & SONS, a Maine corporation (the "Grantee"), whose mailing address is 482 Congress Street, P.O. Box 207, Portland, Maine 04112, the receipt whereof the Grantor does hereby acknowledge, does hereby give, grant, bargain, sell and convey unto the Grantee, its successors and assigns forever, with Warranty Covenants, a certain lot or parcel of land situated in the City of Portland, County of Cumberland and State of Maine, and being more particularly described as follows:

Beginning at a stake on the southeasterly side of High Street Court, which stake is sixty-three and five tenths (63.5) feet northeasterly along High Street Court from the northerly corner of land now or formerly of Bessie O. Farley; thence running South 39° 49' East one hundred forty-three and seventh tenths (143.7) feet as surveyed to the lands now or formerly of said Walter M. Durgan; thence northeasterly along this said land now or formerly of said Durgan eighteen and two tenths (18.2) feet to a stake in the southwesterly line of lands now or formerly of Mary E. Fagan; thence North 37° 13' West along the land of said Mary E. Fagan one hundred forty-four (144) feet as surveyed to a stake in said southeasterly side of said High Street Court, which is the westerly corner of the land of said Mary E. Fagan; and thence southwesterly along the said southeasterly side of said High Street Court twenty-four and five tenths (24.5) feet to the point of beginning.

MAINE REAL ESTATE TAX PAID

Being the premises conveyed to Beth Gideon by Hildredth & White by Warranty Deed dated November 12, 1998 and recorded in the Cumberland County Registry of Deeds in Book 14304, Page 180.

IN WITNESS WHEREOF, the Grantor has caused this instrument to be executed under seal this 28th day of the month of June, 2006.

WITNESS:

Beth Gideon

6/28/2006

40-C-21

24372/292

27 High St.

JBB - Purchasey 11/19/2013

Doc#: 60750 Bk:24372 Pg: 292

File Number 60663

WARRANTY DEED

Maine Statutory Short Form

MAINE REAL ESTATE TAX PAID

KNOW ALL MEN BY THESE PRESENTS, That I/we **William D. Nutting and Diana Sue Bartley, formerly known as Diana S. Nutting,** of the City/Towns of Saco and Clinton in the State of Maine, for consideration paid, grant(s) to **Thomas L. McGinniss** whose mailing address is 690 Congress St, Apt 34, Portland, Maine 04102, with **WARRANTY COVENANTS,** the real property situated in **Portland,** County of **Cumberland** and State of **Maine** more particularly described in Exhibit A attached hereto and incorporated herein by reference.

IN WITNESS WHEREOF, I/we have hereunto set my/our hands(s) and seal(s) this 15th day of September, 2006.

Witness to all

William D. Nutting

William D. Nutting as Attorney in Fact for Diana Sue Bartley

State of Maine
County of Cumberland, ss.

September 15, 2006

Personally appeared before me the above named **William D. Nutting** and acknowledged the foregoing instrument to be his/her/their free act and deed and in his said capacity as attorney in fact for Diana Sue Bartley.

Notary Public/Attorney at Law

LESLEY J. WENTWORTH
Notary Public, Maine
My Commission Expires November 12, 2006

Doc#: 60750 Bk:24372 Pg: 293

File No. 60663

EXHIBIT A
(DEED)

A certain lot or parcel of land situated on the northeasterly side of High Street in Portland, with the buildings thereon, and bounded and described as follows, to wit:

Commencing at the northwesterly corner of land now or formerly belonging to the Estate of J.B. Libby; thence northeasterly on the line of said Libby land eighty (80) feet, more or less, to land now or formerly of James Bradley Estates; thence northerly on the line of said Bradley Estate fifty three (53) feet to land formerly of Nicholas A. Jacobs, deceased; thence westerly on said Jacobs' land eighty (80) feet, more or less, to said High Street; thence southerly on the line of said High Street fifty three (53) feet to the point of beginning.

Meaning and intending to convey and hereby conveying the same premises described in a deed to Diana S. Nutting, now known as Diana Sue Bartley, and William D. Nutting dated August 31, 1993 and recorded in the Cumberland County Registry of Deeds in Book 10995, Page 31.

Received
Recorded Register of Deeds
Sep 15,2006 03:24:07P
Cumberland County
John B OBrien

Reviewed and Approved

26143/287

Doc#: 23197 Bk:24143 Pg: 287

40-C-22
101 York St.

QUITCLAIM DEED with COVENANT

(Maine Statutory Short Form)

KNOW ALL BY THESE PRESENTS, that **ALLIANCE ENERGY LLC**, a Massachusetts limited liability company, formerly being a Massachusetts corporation known as **Alliance Energy Corp.**, with a principal place of business in Lexington, Massachusetts, for consideration paid, GRANTS to **HARBORVIEW, LLC**, a Maine limited liability company of Portland, Maine, whose mailing address is 482 Congress Street, P.O. Box 207, Portland, Maine 04112, with QUITCLAIM COVENANT, the real estate in the City of Portland, County of Cumberland, and State of Maine, described as follows:

See Schedule A attached hereto.

Being the same premises described in a certain deed from Snow Flake Canning Company and Downeast Energy Corp. to Alliance Energy Corp. dated December 1, 2001, and recorded in the Cumberland County Registry of Deeds in Book 17040, Page 159.

Reference is made to Articles of Entity Conversion filed with the Massachusetts Secretary of the Commonwealth on May 14, 2008.

IN WITNESS WHEREOF, the undersigned has caused this instrument to be signed and sealed on June 18, 2008.

MAINE REAL ESTATE TAX PAID

ALLIANCE ENERGY LLC

Witness

By: _____
Andrew Slifka, its Manager

Commonwealth of Massachusetts
County of Middlesex, ss

On this 18th day of June 2008, before me, the undersigned notary public, personally appeared Andrew Slifka, proved to me through satisfactory evidence of identification, which was personal knowledge of the identification of Andrew Slifka, to be the person whose name is signed on the preceding or attached document and acknowledged to me that he signed it voluntarily for its stated purpose as President of Alliance Energy LLC

SEAL

_____
Notary Public
My commission expires

MARY ELLEN WALSH
Notary Public
Commonwealth of Massachusetts
My Commission Expires
February 18, 2011

QC Deed Alliance York St, Portland.DOC
6/12/2008 6:08:00 PM

40-C-22
101 York St.

Schedule A

A certain lot or parcel of land located in the City of Portland, County of Cumberland, and State of Maine, bounded and described as follows:

Beginning at the point of intersection of the northeasterly sideline of High Street and the northwesterly sideline of York Street;

Thence North 37° 45' 00" West along the northeasterly sideline of High Street 96.58 feet to the most southerly corner of land now or formerly of the Estate of Kathryn P. Conroy;

Thence North 53° 00' 00" East along said Conroy land 84.41 feet to the easterly corner thereof;

Thence North 33° 01' 00" West along said Conroy land and land now or formerly of Irving L. Shaw and Helen J. Shaw 66.76 feet to the most southerly corner of land now or formerly of Steven Lee Cawley;

Thence North 49° 50' 00" East along said Cawley land and land now or formerly of Beth Gideon 90.55 feet to a point;

Thence North 57° 26' 00" East along land now or formerly of J.B. Brown 29.01 feet to a point on the southwesterly boundary of land now or formerly of Anthony P. Mezoian and Ann Lee Mezoian;

Thence South 33° 33' 00" East along said Mezoian land 91.34 feet to a point on the northwesterly sideline of York Street;

Thence South 25° 47' 30" West along said sideline of York Street 75.15 feet to a point;

Thence South 31° 12' 00" West along said sideline of York Street 90.07 feet to a point;

Thence South 45° 16' 00" West along said sideline of York Street 51.63 feet to the point of beginning. Containing 21,836 square feet, more or less.

Bearings are magnetic based upon the year 1960. Reference is made to a survey entitled "ALTA/ACSM Land Title Survey on High St and York St, Portland, Maine made for Alliance Energy Corp." prepared by Owen Haskell, Inc. dated October 30, 2001.

Received
Recorded Register of Deeds
Jun 19,2008 02:01:10P
Cumberland County
Pamela E. Lovley

5. Evidence of state and/or federal approvals

- The project site will be fully developed and less than two acres in size. The site will not require an MDEP Site Location of Development.

- With respect to the Stormwater Management Law, the project consists of redevelopment of impervious gravel parking lot. This results in an increase in impervious area of 1,236 sq.ft from the predevelopment condition. Thus, the project qualifies for a Stormwater Permit by Rule (PBR) and is required to comply with the Basic Standards as defined in Chapter 500 of the Stormwater Management Law.

- Based on the traffic assessment memo, this project will generate less than 100 trips and therefore not require a State of Maine Traffic Movement Permit (TMP) issued by the City under its delegated authority.

- We do not anticipate that the project is subject to any other State or Federal approvals, and we are unaware of any pending applications related the project site.

6. Compliance with applicable zoning requirements

Space and Bulk criteria for the B-3 Downtown Business Zone:

Criteria	Required	Provided
Min. Lot Size:	None	71,231 sq.ft. or 1.635 acres
Min. Street Frontage:	15 ft.	York St. = 318.79' High St. = 105.30' Danforth St.= 60.02'
Max. Front Yard Setback:	5 ft.	York = 21.32 ft. High = 5.32 ft.
Min. Yard Dimensions:	None	NA
Min. Lot Width:	None	NA
Max. Length of undifferentiated blank wall	30'	11'-4"
Max. Lot Coverage:	100%	±85%
Min. Building Height:	35 ft within 50' of street	44.4'
Max. Building Height:	45 ft.	*44.4'
Max. Residential. Density:	60 units/acre	63 units/1.635 acres

* Average Building Grade Calculations are attached.

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AVERAGE GRADE CALCULATION:

Node	Conceptual Spot Elevations	Nodes	Average Grade	Distance (feet)	Product
A	32.0	A-B	31.5	39.7	1251
B	31.0	B-C	30.8	2.0	62
C	30.6	C-D	30.6	199.0	6089
D	30.6	D-E	29.9	30.0	897
E	29.2	E-F	29.1	16.0	466
F	29.0	F-G	29.0	38.3	1111
G	29.0	G-H	30.0	26.5	795
H	31.0	H-I	32.5	75.0	2438
I	34.0	I-J	35.0	30.0	1050
J	36.0	J-K	39.5	30.0	1185
K	43.0	K-L	43.5	25.0	1088
L	44.0	L-M	47.0	12.0	564
M	50.0	M-N	50.0	223.0	11150
N	50.0	N-O	49.5	35.0	1733
O	49.0	O-P	46.0	125.0	5750
P	43.0	P-Q	43.3	34.0	1471
Q	43.5	Q-R	43.5	61.3	2667
R	43.5	R-S	43.5	61.0	2654
S	43.5	S-T	43.7	38.6	1687
T	43.9	T-U	43.9	10.0	439
U	43.9	U-V	42.0	60.7	2546
V	40.0	V-A	36.0	86.3	3107
A	32.0				
	Approximate Building Perimeter:			1258.4	
	Total Sum of Product:				50196
	Weighted Average Grade:			(Product /Perimeter)	39.9

BUILDING HEIGHT CALCULATION:

30.6' Elevation of first floor
+ 53.7' Measurement from finish floor to top of highest roof beam
= 84.3' Elevation at the top of the highest roof beam
- 39.9' Weighted average grade
= 44.4' Calculated building height as defined in Portland's land use ordinances

45.0' Allowable building height per Portland's land use regulations
- 44.4' building height (see above)
0.6' below the allowable height



0 10 20

SCALE: 1" = 20'

Friday, August 07, 2015 5:31:45 PM

OPECHEE CONSTRUCTION CORPORATION
11 CORPORATE DRIVE ■ BELMONT ■ NH 03220
PHONE 603-267-6908 ■ WWW.OPECHEE.COM

Mixed Use Development

York & High Street
Portland, Maine

REVISION:

ISSUED:

project architect: KK
drawn by: BS

AVERAGE GRADE CALCULATION

sheet number:
1 of 1

Proposed Easements

- Permanent utility easement (Area A)
  for benefit **New Lot A** over Tax Lot 40-C-2
  (installation & maintenance for electric & communications utilities)

- Permanent utility easement (Area B)
  for benefit **Tax Lot 40-C-2 & New Lot A** over New Lot B
  (installation & maintenance for electric & communications utilities)

- Permanent utility easement (Area C)
  for benefit **Tax Lot 40-C-2** over New Lot A
  (installation & maintenance for electric & communications utilities)

- Permanent access easement (Area D)
  for benefit **Tax Lot 40-C-2, New Lot A & 27 High Street** over New Lot B
  (common driveway, sidewalk & bike rack)

- Temporary construction easement (Area E)
  for benefit **New Lot A** over **Tax Lot 40-C-2**
  (construction of electric, communications, driveway, sidewalk, landscaping, and grading)

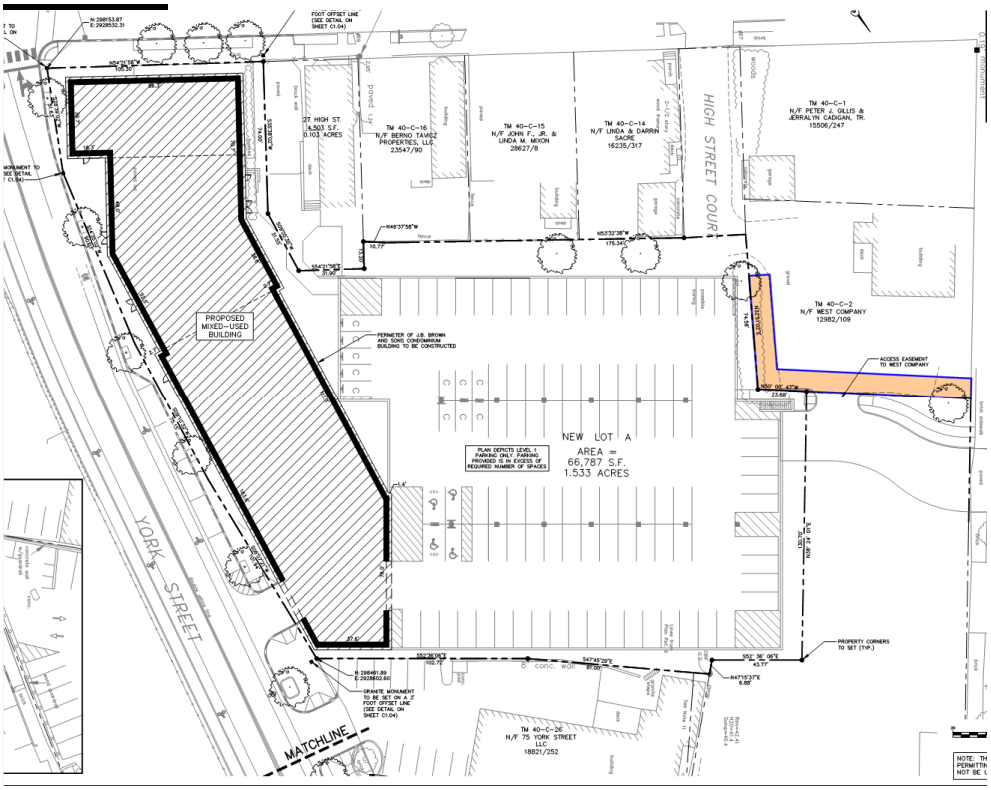
- Permanent public access (Area F)
  for benefit **City of Portland** over New Lot A
  (public access over sidewalk*)*

- Permanent common area and utility easements (Area G)
  for benefit **New Lot A** over 27 High Street
  (maintenance for the plaza, fire access, patio, and utilities improvements)

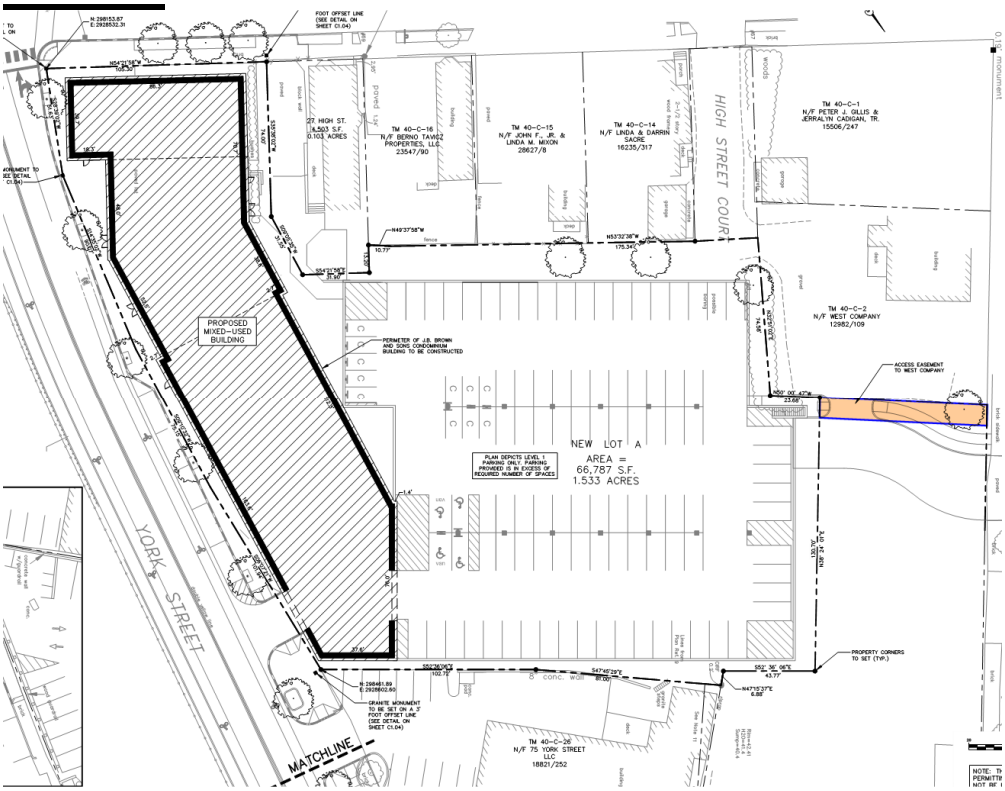
- Temporary construction easement (Area H)
  for benefit **New Lot A** over Tax Lot 40-C-26
  (to facilitate the construction of any improvements related to the proposal including demolition of the existing retaining wall, grading pavement repair, and landscaping)

The applicant request the Planning Board to approve the application with the condition that drafts of the above easements are to be reviewed and finalized to the satisfaction of the Corporation Counsel prior to the issuance of a building permit

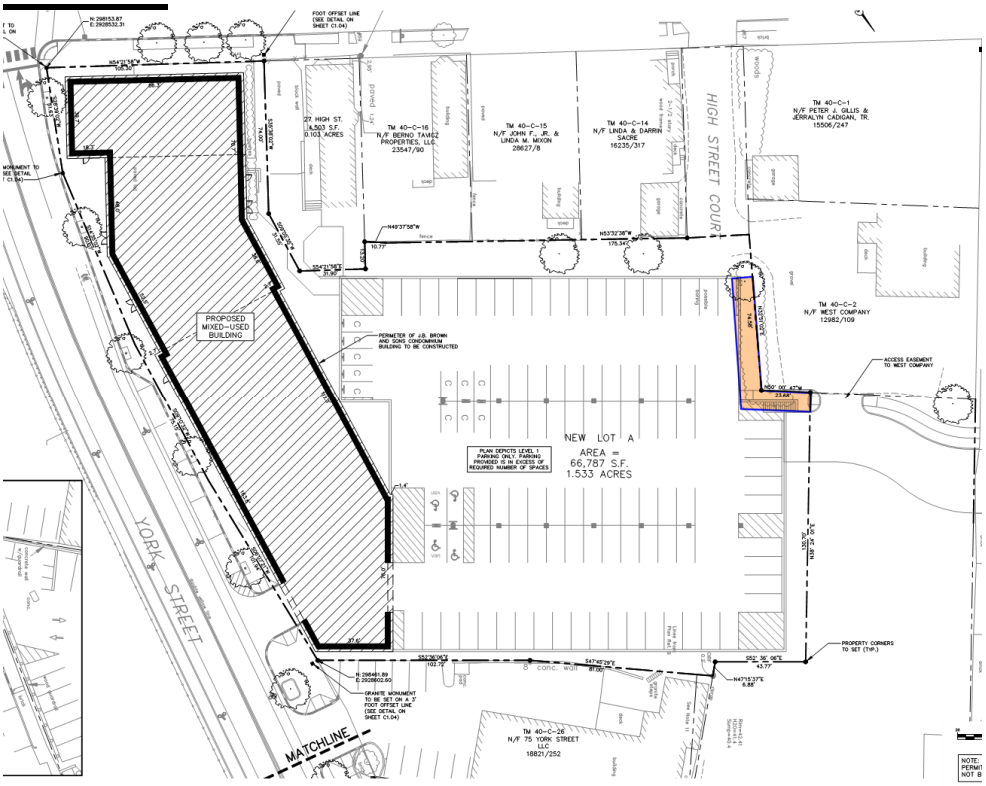
Area A


HIGH STREET COURT
YORK STREET
PROPOSED MIXED-USED BUILDING
PERIMETER OF J.B. BROWN AND SONS CONDOMINIUM BUILDING TO BE CONSTRUCTED
NEW LOT A
AREA = 66,787 S.F. 1.533 ACRES
PLAN DEPICTS LEVEL 1 PARKING ONLY. PARKING PROVIDED IS IN EXCESS OF REQUIRED NUMBER OF SPACES
ACCESS EASEMENT TO WEST COMPANY
PROPERTY CORNERS TO SET (TYP.)
GRANITE MONUMENT TO BE SET ON A 3' FOOT OFFSET LINE (SEE DETAIL ON SHEET C1.04)
MATCHLINE
27 HIGH ST. 4,503 S.F. 0.103 ACRES
TM 40-C-16 N/F BERNO TAMEZ PROPERTIES, LLC 23547/90
TM 40-C-15 N/F JOHN F., JR. & LINDA M. MIXON 28627/8
TM 40-C-14 N/F LINDA & DARRIN SACRE 16235/317
TM 40-C-1 N/F PETER J. GILLIS & JERRALYN CADIGAN, TR. 15506/247
TM 40-C-2 N/F WEST COMPANY 12982/109
TM 40-C-26 N/F 75 YORK STREET LLC 18821/252

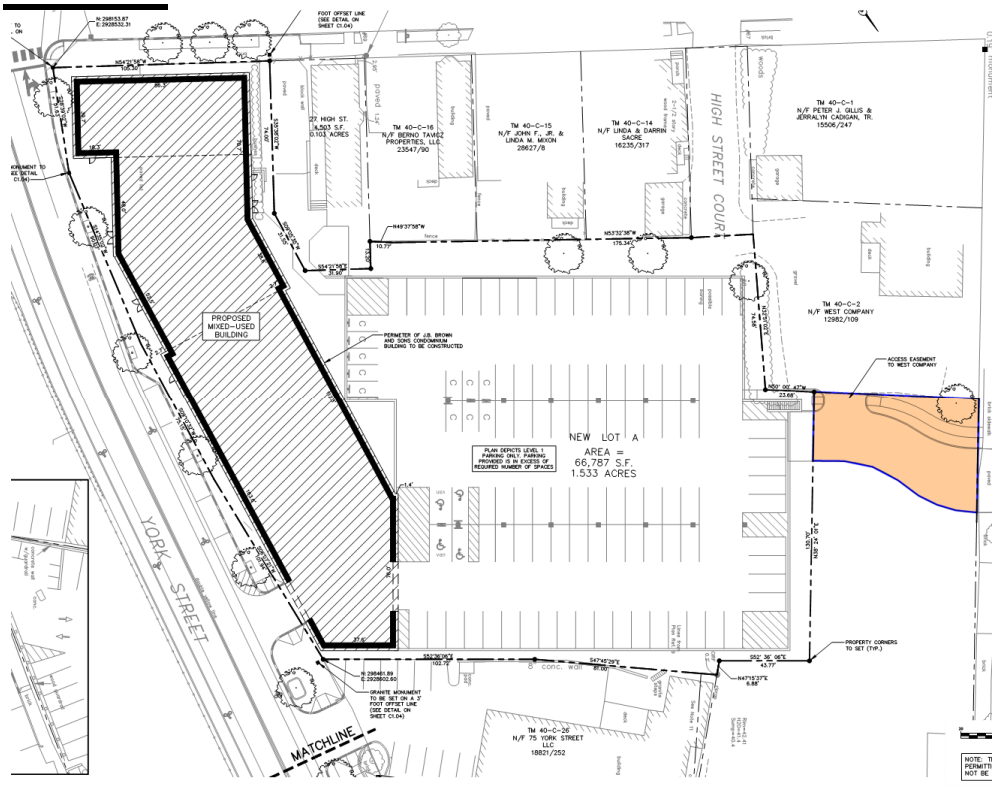
Area B


HIGH STREET COURT
YORK STREET
PROPOSED MIXED-USED BUILDING
PERIMETER OF J.B. BROWN AND SONS CONDOMINIUM BUILDING TO BE CONSTRUCTED
NEW LOT A
AREA = 66,787 S.F. 1.533 ACRES
PLAN DEPICTS LEVEL 1 PARKING ONLY. PARKING PROVIDED IS IN EXCESS OF REQUIRED NUMBER OF SPACES
ACCESS EASEMENT TO WEST COMPANY
PROPERTY CORNERS TO SET (TYP.)
GRANITE MONUMENT TO BE SET ON A 3' FOOT OFFSET LINE (SEE DETAIL ON SHEET C1.04)
MATCHLINE
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TM 40-C-16 N/F BERNO TAMEZ PROPERTIES, LLC 23547/90
TM 40-C-15 N/F JOHN F., JR. & LINDA M. MIXON 28627/8
TM 40-C-14 N/F LINDA & DARRIN SACRE 16235/317
TM 40-C-1 N/F PETER J. GILLIS & JERRALYN CADIGAN, TR. 15506/247
TM 40-C-2 N/F WEST COMPANY 12982/109
TM 40-C-26 N/F 75 YORK STREET LLC 18821/252

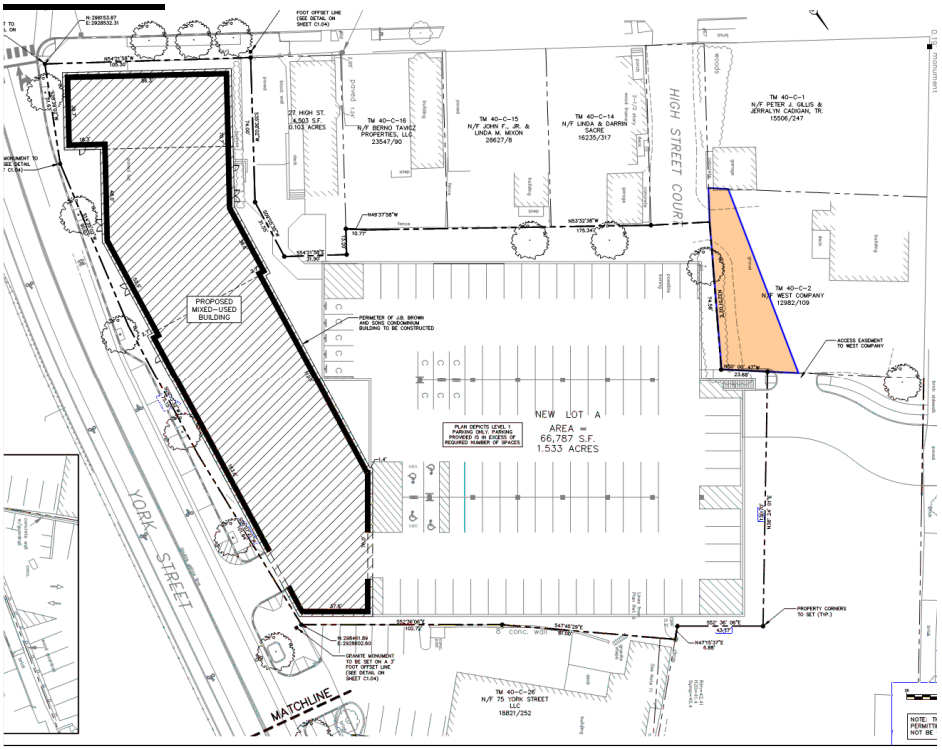
Area C


HIGH STREET COUR
YORK STREET
MATCHLINE
PROPOSED MIXED-USED BUILDING
NEW LOT A
AREA = 66,787 S.F. 1.533 ACRES
27 HIGH ST. 4,503 S.F. 0.103 ACRES
TM 40-C-16 N/F BERND TAMEZ PROPERTIES, LLC 23547/90
TM 40-C-15 N/F JOHN F., JR. & LINDA M. MIXON 28627/8
TM 40-C-14 N/F LINDA & DARRIN SACRE 16235/317
TM 40-C-1 N/F PETER J. GILLIS & JERRALYN CADIGAN, TR. 15506/247
TM 40-C-2 N/F WEST COMPANY 12982/109
TM 40-C-26 N/F 75 YORK STREET LLC 18821/252
ACCESS EASEMENT TO WEST COMPANY
PROPERTY CORNERS TO SET (TYP.)
GRANITE MONUMENT TO BE SET ON A 3' FOOT OFFSET LINE (SEE DETAIL ON SHEET C1.04)
PERIMETER OF J.B. BROWN AND SONS CONDOMINIUM BUILDING TO BE CONSTRUCTED
PLAN DEPICTS LEVEL 1 PARKING ONLY PARKING PROVIDED IS IN EXCESS OF REQUIRED NUMBER OF SPACES

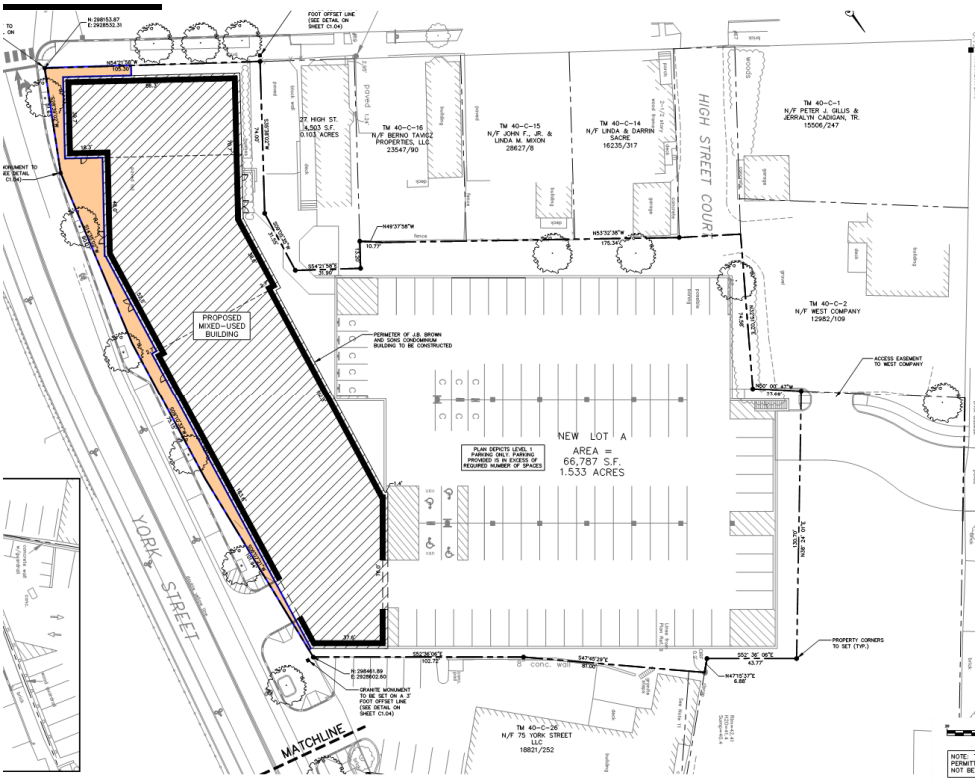
Area D


HIGH STREET COUR
YORK STREET
MATCHLINE
PROPOSED MIXED-USED BUILDING
NEW LOT A
AREA = 66,787 S.F. 1.533 ACRES
27 HIGH ST. 4,503 S.F. 0.103 ACRES
TM 40-C-16 N/F BERND TAMEZ PROPERTIES, LLC 23547/90
TM 40-C-15 N/F JOHN F., JR. & LINDA M. MIXON 28627/8
TM 40-C-14 N/F LINDA & DARRIN SACRE 16235/317
TM 40-C-1 N/F PETER J. GILLIS & JERRALYN CADIGAN, TR. 15506/247
TM 40-C-2 N/F WEST COMPANY 12982/109
TM 40-C-26 N/F 75 YORK STREET LLC 18821/252
ACCESS EASEMENT TO WEST COMPANY
PROPERTY CORNERS TO SET (TYP.)
GRANITE MONUMENT TO BE SET ON A 3' FOOT OFFSET LINE (SEE DETAIL ON SHEET C1.04)
PERIMETER OF J.B. BROWN AND SONS CONDOMINIUM BUILDING TO BE CONSTRUCTED
PLAN DEPICTS LEVEL 1 PARKING ONLY PARKING PROVIDED IS IN EXCESS OF REQUIRED NUMBER OF SPACES

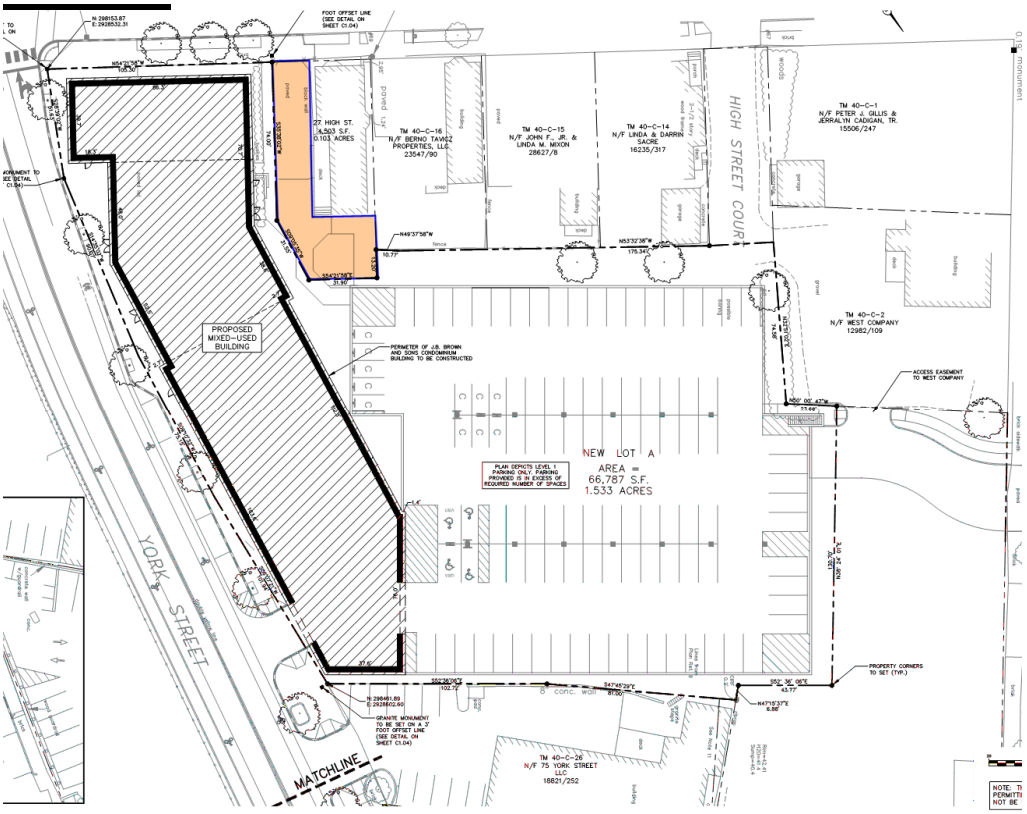
Area E


HIGH STREET COURT
YORK STREET
PROPOSED MIXED-USED BUILDING
NEW LOT A
AREA = 66,787 S.F. 1.533 ACRES
PLAN DEPICTS LEVEL 1 PARKING ONLY. PARKING PROVIDED IS IN EXCESS OF REQUIRED NUMBER OF SPACES
PERIMETER OF J.B. BROWN AND SONS CONDOMINIUM BUILDING TO BE CONSTRUCTED
ACCESS EASEMENT TO WEST COMPANY
PROPERTY CORNERS TO SET (TYP.)
MATCHLINE
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TM 40-C-15 N/F JOHN F. JR. & LINDA M. MIXON 28627/8
TM 40-C-16 N/F BERNO TAWEZ PROPERTIES, LLC 23547/90
TM 40-C-26 N/F 75 YORK STREET LLC 18821/252
27 HIGH ST. 4,503 S.F. 0.103 ACRES

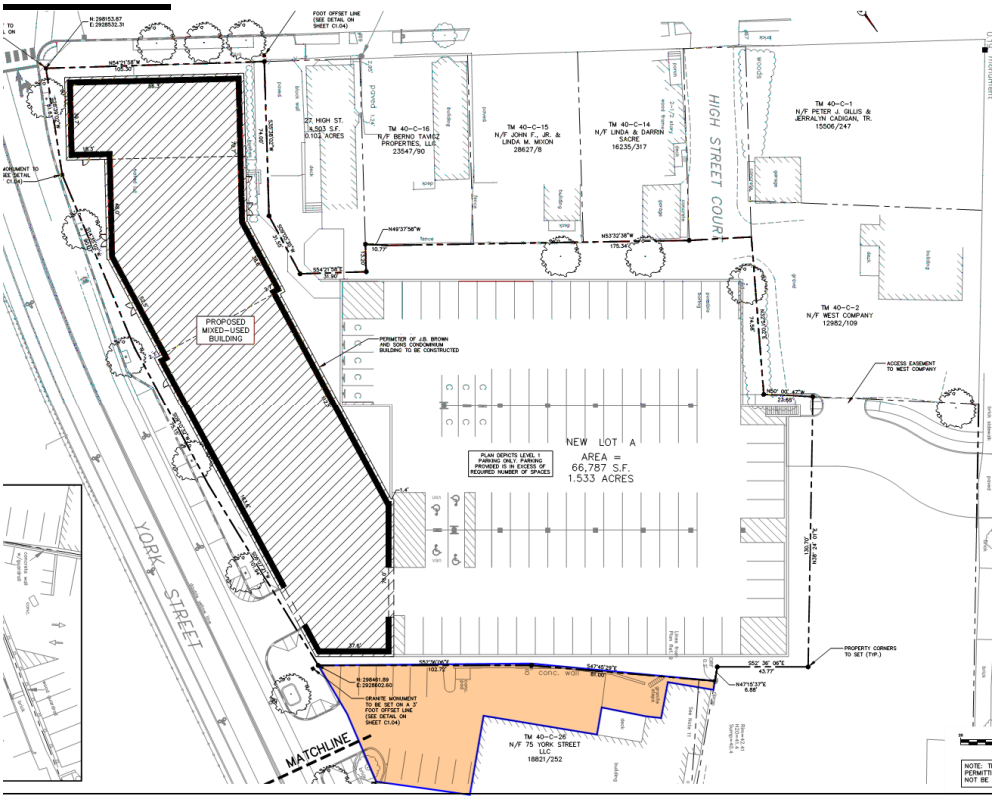
Area F


HIGH STREET COURT
YORK STREET
PROPOSED MIXED-USED BUILDING
NEW LOT A
AREA = 66,787 S.F. 1.533 ACRES
PLAN DEPICTS LEVEL 1 PARKING ONLY. PARKING PROVIDED IS IN EXCESS OF REQUIRED NUMBER OF SPACES
PERIMETER OF J.B. BROWN AND SONS CONDOMINIUM BUILDING TO BE CONSTRUCTED
ACCESS EASEMENT TO WEST COMPANY
PROPERTY CORNERS TO SET (TYP.)
MATCHLINE
TM 40-C-1 N/F PETER J. GILLIS & JERRALYN CADIGAN, TR. 15506/247
TM 40-C-2 N/F WEST COMPANY 12982/109
TM 40-C-14 N/F LINDA & DARRIN SACRE 16235/317
TM 40-C-15 N/F JOHN F. JR. & LINDA M. MIXON 28627/8
TM 40-C-16 N/F BERNO TAWEZ PROPERTIES, LLC 23547/90
TM 40-C-26 N/F 75 YORK STREET LLC 18821/252
27 HIGH ST. 4,503 S.F. 0.103 ACRES

Area G


HIGH STREET COURT
YORK STREET
PROPOSED MIXED-USED BUILDING
NEW LOT A
AREA =
66,787 S.F.
1.533 ACRES
MATCHLINE
TM 40-C-1
N/F PETER J. GILLIS & JERRALYN CADIGAN, TR.
15506/247
TM 40-C-2
N/F WEST COMPANY
12982/109
TM 40-C-24
N/F 75 YORK STREET LLC
18821/252
ACCESS EASEMENT TO WEST COMPANY
PROPERTY CORNERS TO SET (TYP.)

Area H


HIGH STREET COURT
YORK STREET
PROPOSED MIXED-USED BUILDING
NEW LOT A
AREA =
66,787 S.F.
1.533 ACRES
MATCHLINE
TM 40-C-1
N/F PETER J. GILLIS & JERRALYN CADIGAN, TR.
15506/247
TM 40-C-2
N/F WEST COMPANY
12982/109
TM 40-C-24
N/F 75 YORK STREET LLC
18821/252
ACCESS EASEMENT TO WEST COMPANY
PROPERTY CORNERS TO SET (TYP.)

8. Requested Waivers

1. Location and spacing of driveways:

Standard: Under the City's 'Technical Manual' Section 1.7.2.7 Location and spacing of driveways, requires that 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 below: for roads with a speed limit of 30 mph the minimum separation shall be 125' (including driveways on both sides of the street).

The project proposes to remove the (3) closest curb cuts to the intersection of York Street and High Street. The lower level of the proposed parking garage will utilize an existing curb cut on York Street that is the most distant from that public intersection. The existing curb cut is 50' in width and is approximately 25' from the driveway at 75 York Street and approximately 70' from next driveway northeast on York Street. The project proposes to reconstruct the existing curb cut to a standard driveway width and utilize a brick driveway apron/crosswalk. In the post-development condition, the proposed separation distances will be increased by 15' to approximately 40' and 85' from the two northeast driveways. In addition, the project proposes a dedicated right-turn only lane for these (3) driveways. The applicant request that Planning Board specifically grant relief from the above mentioned City standard as it relates to the proposed separation of the driveways.

2. Dimensional requirements: Street wall build-to line:

Ordinance: Under the City's Land Use Ordinance Section 14-220 (c) Street wall build-to line: All buildings or structures shall be located within five (5) feet of the property line along street frontages, unless the Planning Board requires or approves an additional distance to comply with the requirements of section 14-526 (d)9 and the City of Portland Design Manual.

The project proposes a 5-story mixed-use building along York Street and the above mentioned ordinance is applicable to the project. However, because of the unusual geometry of the right-of-way line along the frontage, the applicant request the Planning Board to grant relief from ordinance.

The proposed redevelopment will construct brick sidewalk from the building façade to the proposed street curb line and grant access easements to create a public pedestrian friendly environment. The project's street level first floor will be flexible commercial spaces and will provide a pedestrian friendly environment with floor to ceiling store front windows for visual interest and street front building access. Additional, improvements will include inviting building exterior, brick sidewalks, granite curbing, curb ramps, architectural lighting, granite sit walls, street trees and landscaped planters. The street-level flexible commercial space will be pedestrian friendly by providing floor to ceiling store front windows for create visual interest and by providing building access points from the street.

It is the applicants belief that all the above mentioned design elements will meet the intent of the ordinance will create an enhanced streetscape with an enjoyable pedestrian environment.

3. <u>Required number of bicycle parking spaces:</u>
Ordinance: Under the City's Land Use Ordinance Section 14-526 (a) 4. b. (ii) The reviewing authority may reduce the required number of bicycle parking spaces if it determined, based on evidence submitted by the applicant that the proposed development is expected to generate a reduced demand for bicycle parking.

The required number of bicycle parking spaces is calculated from the required parking spaces and quantity of residential units.

Bicycle Parking Required:

Residential = 2 bikes/5 dwelling units = 63/5 x 2 = 26 spaces
Non-residential = 2 bike/10 parking spaces req. = 65/10 x 2 = <u>7 spaces</u>
Total: 33 spaces

The required number of bicycle parking spaces is 33. The applicant requests that the bicycle parking be reduced to 20 spaces and made part of the Traffic Demand Management plan. The project proposes (5) locations with two bike hitches around the site for a total of 20 spaces. If TDM monitoring determines the quantity of bike spaces is inadequate in the post-development condition, the owner can install additional bike racks on the lower and upper garage levels.

9. Financial and Technical Capacity

Technical Capability
The project will be designed and built by Opechee Construction Corporation. Opechee has proved their technical ability with the design & construction of several mixed-used projects around the City:

- 209 Fore Street- redevelopment of Jordan's Meats factory into a mixed-use building consisting of a Hampton Inn, Sebago Brewing, and residential condominiums

- 321 Commercial Street – redevelopment of an existing parking lot into a mixed-use building consisting of a Marriott Courtyard, a restaurant and residential condominiums.

- 68 Marginal Way – The construction of a multi-tenant office building

Financial Capability
Attached is a letter indicating J.B. Brown's financial ability to complete the project.

TD Bank
America's Most Convenient Bank®
One Portland Square
P. O. Box 9540
Portland, ME 04112-9540
T 207 761 8600
F 207 761 8660

tdbank.com

August 5, 2015

Planning Board
City of Portland
Congress Street
Portland, ME

RE: 101 York Street Development
Portland, Maine

To Whom It May Concern:

J.B. Brown & Sons has had a banking relationship with TD Bank, N.A. in excess of 20 years. During this timeframe, the Bank has financed and/or reviewed several projects that were similar to the proposed project referenced above. These projects were completed on time, within budget and were repaid in a timely manner.

We believe that J.B. Brown & Sons, Inc. has the financial capacity to successfully complete the proposed development.

Although the Bank has not committed to finance this project, the Bank would be pleased to consider J.B. Brown's request to finance the project at the appropriate time.

If you need any further information, please contact me at (207) 828-7162.

Sincerely,

Jennifer E.H. Sirois
Vice President
Relationship Manager

10. Boundary Survey

- The boundaries of the subject property are shown on the plan entitled, "ALTA/ACSM Land Title Survey on High, Danforth, Maple & York Streets, Portland, Cumberland County, Maine made for J.B. Brown & Sons," by Owen Haskell, Inc. 390 U.S. Route One, Unit #10, Falmouth, Maine 04105; dated December 3, 2013 and last revised June 9, 2015
  (A copy of the plan is submitted with this application.)

- The new division of property lines for parcels under common ownership are shown on the plan entitled, "New Division of Lots on High, Danforth, Maple & York Streets, Portland, Cumberland County, Maine made for J.B. Brown & Sons," by Owen Haskell, Inc. 390 U.S. Route One, Unit #10, Falmouth, Maine 04105; dated December 3, 2013 and last revised August 5, 2015
  (A copy of the plan is submitted with this application.)

WRITTEN MATERIALS

1. Construction Management Plans

Construction Management Plans have been prepared that show temporary traffic control and the construction sequencing been prepared for the project and are sheets C10.01 through C10.04 of the plan set

2. Traffic Studies

Trip Study and trip generation

- A traffic assessment memo is attached and this project will generate between less than 100 trips. Therefore, the project will not require a State of Maine Traffic Movement Permit (TMP) issued by the City under its delegated authority.

- A traffic study is attached and is based on scoping questions asked at the pre-application.

Parking Study

A parking assessment memo has been prepared for this project and is attached.

GORRILL PALMER

PO Box 1237, 15 Shaker Road
Gray, Maine 04039
207.657.6910

Traffic Impact Study
York Street Apartments
Portland, Maine
November 11, 2015

I. Introduction

The purpose of this Study is to assess the traffic impact of the proposed mix use development on the intersection of York and High Street in Portland, Maine. There are currently four buildings on the site, three of which are proposed to be demolished to create enough space for the new five story multi-use structure. The first floor will be specialty retail and restaurant space and the four upper levels will be residential units. The apartments will include 63 new apartments (12 one bedroom, 47 two bedroom, and 4 three bedroom). In addition, a two level parking structure will be constructed. The lower level will be accessed from York Street and the upper level will be accessed from Danforth Street.

The attached Figure 1 shows the approximate location of the site.

II. Existing Traffic Volumes

Gorrill Palmer (GP) obtained weekday turning movement counts at the following intersections:

- York Street / High Street
- High Street / Danforth Street
- Commercial Street / High Street

The turning movements were collected on June 10, 2014 as part of a different project by others. The results of the counts are shown on the attached Figure 2.

III. Proposed uses in the Vicinity of the Proposed Development

Approved projects that are not yet opened as well as projects for which applications have been filed are required to be included in the predevelopment volumes. GP contacted Rick Knowland, Portland Senior Planner, and he suggested investigating the Portland International Marine Terminal project. That trip generation was only forecast to have a maximum of 62 trip ends during the peak hour. Due to this low trip generation and the distance from the York Street Apartments site, this project was determined to have little to no impact on the post-development traffic volumes.

IV. Predevelopment Traffic Volumes

The traffic volumes shown in Figure 2 were obtained in 2014 as part of a different study by others, and have been seasonally adjusted by GP to approximate the 30th highest hour of the year using the weekly group mean factors published by the MaineDOT. This seasonal adjustment increases the volumes to those that may occur during the peak summer months. This seasonal adjustment resulted in an increase of two percent.

In addition to seasonally adjusting the traffic volumes, they are also increased by a yearly growth to approximate the build out year of the project. The proposed project is anticipated to be completed in 2017. The MaineDOT traffic counts in the area show an average increase in traffic of 1.5% per year in recent years.

The traffic volumes shown on Figure 3 reflect both the seasonal and annual adjustments to yield the 2017 Predevelopment Design Hour Volumes (DHV).

V. Trip Generation

The Institute of Transportation Engineers' publication *Trip Generation Manual, 9th Edition* was used to determine trip generation for both the proposed uses as well as existing / previous uses that were on site. It should be noted that the proposed trip generation is conservative since it does not take into account the proposed demolition of the three buildings on York Street and High Street. The following summarizes the forecast trip generation:

The proposed development is to include the following uses:

- 63 Condo Units – LUC 232
- 7,000 sf High Turnover (Sit Down) Restaurant – LUC 932
- 9,955 sf Specialty Retail – LUC 826

The MaineDOT allows "credit" to be given for any on-site use within the last 10 years. For this site, that would include the following:

- Gas Station / Convenience Store (4 fueling positions + 1,350 sf C-Store) – LUC 853
- 1,300 sf Restaurant – LUC 932
- 9,000 sf Office Space – LUC 710

Using the 9th Edition of the Institute of Transportation Engineers (ITE) publication Trip Generation results in the following trip generation estimates (calculations attached):

Trip Generation Summary

	AM Generator	AM Adj St	PM Generator	PM Adj St
Proposed				
Condos	33	35	30	31
Restaurant	93	76	129	69
Retail	68	50	50	37
Proposed Total	**194**	**161**	**209**	**137**
Credit (Subtracted from				
Gas / C Store	63	61	82	73
Restaurant	17	14	24	13
Office	21	21	20	20
Credit Total	**101**	**96**	**126**	**106**
Net Total	**93**	**65**	**83**	**31**

After review of this information, it is our opinion that the site will not generate a net increase in trip generation of more than 99 peak hour trip ends, and therefore does not require a MaineDOT Traffic Movement Permit. We understand this trip generation is not the same increase in trips that can be expected on the adjacent roadway network since the "credit" uses were not all operational at the time the recent turning movement counts were performed. The following summarizes the forecast trip generation for the proposed uses:

- AM Peak Hour of Adjacent Street Traffic = 161 Trip Ends (75 In / 86 Out)
  - Condos = 35 Trip Ends (7 In / 28 Out)
  - Restaurant = 76 Trip Ends (38 In / 38 Out)
  - Retail = 50 Trip Ends (30 In / 20 Out)

- PM Peak Hour of Adjacent Street Traffic = 137 Trip Ends (77 In / 60 Out)
  - Condos = 31 Trip Ends (19 In / 12 Out)
  - Restaurant = 69 Trip Ends (41 In / 28 Out)
  - Retail = 37 Trip Ends (17 In / 20 Out)

The above trip generation forecast is for three individual uses and does not consider that some of the trips will be shared between the uses. For instance, someone going to the restaurant may also visit the retail or someone who lives in the condo may visit either the restaurant or the retail. For the purposes of this study, we have assumed a five percent vehicular shared trip reduction. In addition to shared trips, because of the in-town location of the project, it can be expected that there will be some walkers, bicyclists, and people using the transit system. For the purpose of this study, a five percent reduction in vehicular trips was taken to account for other modes of transportation. The resulting trip generation forecast on the adjacent street system is summarized as follows:

- AM Peak Hour of Adjacent Street Traffic = 145 Trip Ends (67 In / 78 Out)
- PM Peak Hour of Adjacent Street Traffic = 123 Trip Ends (69 In / 54 Out)

VI. Trip Composition and Assignment

We have assumed that all trips are primary trips made for the sole purpose of going to and from the site. The trip assignment is based on the existing traffic patterns as identified from the traffic counts completed at the study area intersections. The trip assignment is shown on the attached Figure 4.

VII. Post-Development Traffic Volume

The pre-development traffic volumes shown in Figure 3 have been combined with the traffic forecast for the development shown in Figure 4 to yield the 2017 Post-development DHV shown on Figure 5 (attached).

VIII. Capacity Analysis

GP completed capacity analyses for the following intersections:

- York Street / High Street (Signalized)
- High Street / Danforth Street (Signalized)
- Commercial Street / High Street (Unsignalized)

The analysis was completed using Synchro/SimTraffic analysis software. Levels of service rankings are similar to the academic ranking system where an 'A' is very good with little control delay and an 'F' represents very poor conditions. If the level of service falls below a D, an evaluation should be made to determine if mitigation is warranted.

The following table summarizes the relationship between control delay and level of service:

Level of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec)
A	Up to 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	Greater than 80.0

Level of Service Criteria for Unsignalized Intersections

Level of Service	Control Delay per Vehicle (sec)
A	Up to 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

The results of the capacity analyses are summarized as follows. The detailed analyses are attached.

Level of Service Summary

Approach	Level of Service			
	AM Pre	AM Post	PM Pre	PM Post
High / Danforth (Signalized)				
High NW	A	B	A	A
Danforth NE	B	B	B	B
Danforth SW	A	A	A	A
Total	B	B	A	A
High / York (Signalized)				
York NB	B	B	C	D
York SB	C	B	E	E
High NW	B	B	C	C
Total	B	B	C	D
High / Commercial (Unsignalized)				
Commercial NB	A	A	B	B
Commercial SB	A	A	B	B
High SE	B	A	F	F
Hobson's Wharf NW	D	D	F	F
Danforth / Site Driveway (Unsignalized)				
Site Driveway NW	N/A	A	N/A	A
Danforth NE	N/A	A	N/A	A
Danforth SW	N/A	A	N/A	A
York / Site Driveway (Unsignalized)				
York NB	N/A	A	N/A	A
York SB	N/A	A	N/A	A
Site Driveway SE	N/A	A	N/A	A

The post development condition includes the addition of a 75 ft left turn lane on the southbound approach of the intersection of High Street with York Street. As can be seen from the above results, the overall signalized intersections are forecast to operate at levels of service "D" or above. The side street approaches at the unsignalized intersection of High Street with Commercial Street are forecast to operate at a low level of service during the PM peak hour in both the pre and post development conditions. This is not unusual for an unsignalized intersection in a downtown area. The proposed site driveways are forecast to operate at high

levels of service during the AM and PM peak hours. The intersection of High Street with York Street shows an increased level of service from the AM pre development condition to the AM post development condition. This is likely due to the additional lane added in the post development condition on the southbound approach.

IX. Sight Line Evaluation

Both the City and Maine Department of Transportation have guidelines for sight distances. The City's sight distance criteria is the same as the MaineDOT. The basic sight line standards are as follows:

Standards for Sight Distance

Posted Speed (mph)	City / MaineDOT Sight Distance (ft)
25	200
30	250
35	305
40	360
45	425

The MaineDOT and City measure sight distance using the same methodology. GP has evaluated the available sight lines exiting the driveways in accordance with MaineDOT / City standards.

The evaluation method is as follows:

Driveway observation point:	10 feet off edge of travel way
Height of eye at driveway:	3 ½ feet above ground
Height of approaching vehicle:	4 ¼ feet above ground

All speed limits in the immediate area are posted 25 mph, requiring an available sight distance of 200 feet. The following table summarizes the measured sight distances.

Sight Distance Summary

Approach	Sight Distance (ft)		
	Looking Left	Looking Right	Required
Exiting driveway onto Danforth	To High Street	+250	200
Exiting driveway onto York	+250	+250	200

As summarized in the table, the available sight distances meet criteria. However, it should be noted that on-street parking, such as along Danforth Street, reduces the available sight distances below that recorded in the table. This is not uncommon for driveways in downtown areas. GP recommends that for all exits, all plantings that have the potential to block sight distances be maintained at or below 2 feet in height. In addition, signage should be located so that it does not interfere with sight lines. We also recommend that during construction, if heavy equipment is entering and exiting the site, that appropriate measures, such as signage and flag persons, be utilized in accordance with the Manual on Uniform Traffic Control Devices.

X. Crash Summary Data

GP obtained the crash data (attached) from the MaineDOT for the period of 2012-2014, the most recent period available at the time this was prepared.

In order to evaluate whether a location has a crash problem, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor of 1.00 or more for a three-year period. (A Critical Rate Factor {CRF} compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicates a rate of less than average) **and**

2. A minimum of eight crashes over the same three-year period.

Based on the crash data provided by the MaineDOT, there are no high crash locations within the area of study.

XI. Pedestrian Accommodations

There are currently crosswalks at both the intersection of High Street with York Street and High Street with Danforth Street. At the intersection of High Street with Danforth Street there are crosswalks on all four approaches. At the intersection of High Street with York Street crosswalks are currently across the eastbound and northbound approaches. Sidewalks are located on both sides of High Street, both sides of Danforth Street, both sides of York eastbound, and one side of York westbound. A project is currently under design that would add a sidewalk to the easterly side of York Street and improve pedestrian accommodations at the York Street / High Street intersection.

XII. Conclusions / Recommendations

The following is a summary of the conclusions and recommendations based on the information and analyses presented in this study.

1. The proposed condo, restaurant, and retail mixed use development is forecast to generate 145 vehicular trip ends in the AM peak hour and 123 vehicular trip ends in the PM peak hour. However, with trip generation credit allowed for the existing / previous uses, the net increase in trip generation is less than the 99 trip generation threshold for requiring a MaineDOT traffic movement permit.

2. The capacity analyses shows the existing signalized intersections are forecast to operate at levels of service "D" or better. The approaches at the unsignalized intersections are forecast to operate at levels of service "D" or better in the AM peak hour with the side street approaches at lower levels of service in the PM peak hour. Low levels of service for STOP controlled approaches during peak hours is not uncommon in a downtown at unsignalized intersections.

3. Sight distances exiting the site driveways meet or exceed required. However, existing on-street parking reduces the available sight distances exiting the driveways, which is not uncommon for driveways in a downtown.

4. The crash data shows that there are no high crash locations within the study area.

5. In our opinion, the proposed project will have minimal impact on the surrounding roadway network, and the surrounding roadway network has the capacity to accommodate the proposed project.

Prepared By:
Randy Dunton, PE, PTOE

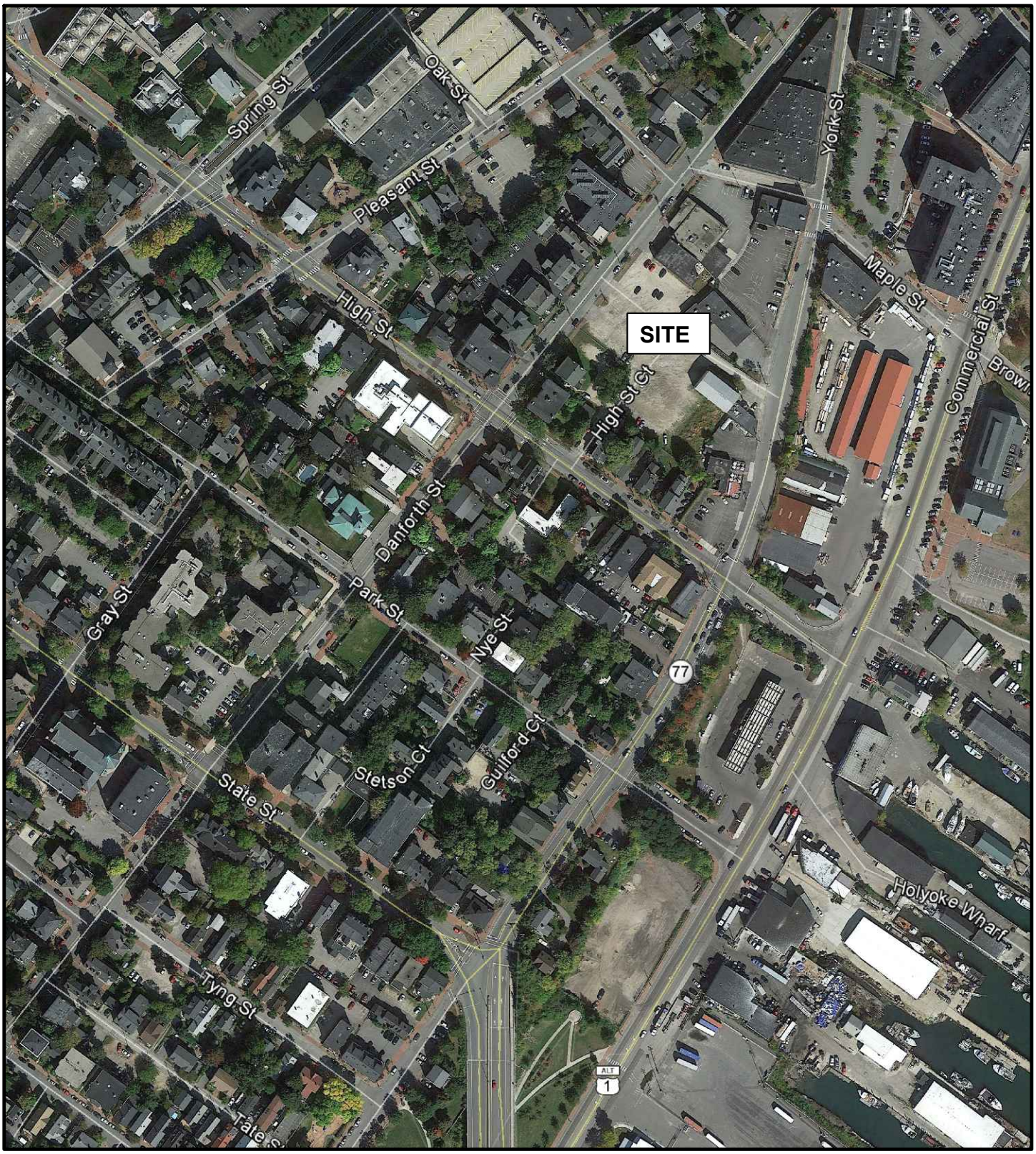
Appendix A

Site Location Map

Turning Movement Diagrams

Location Map

Figure No. 1



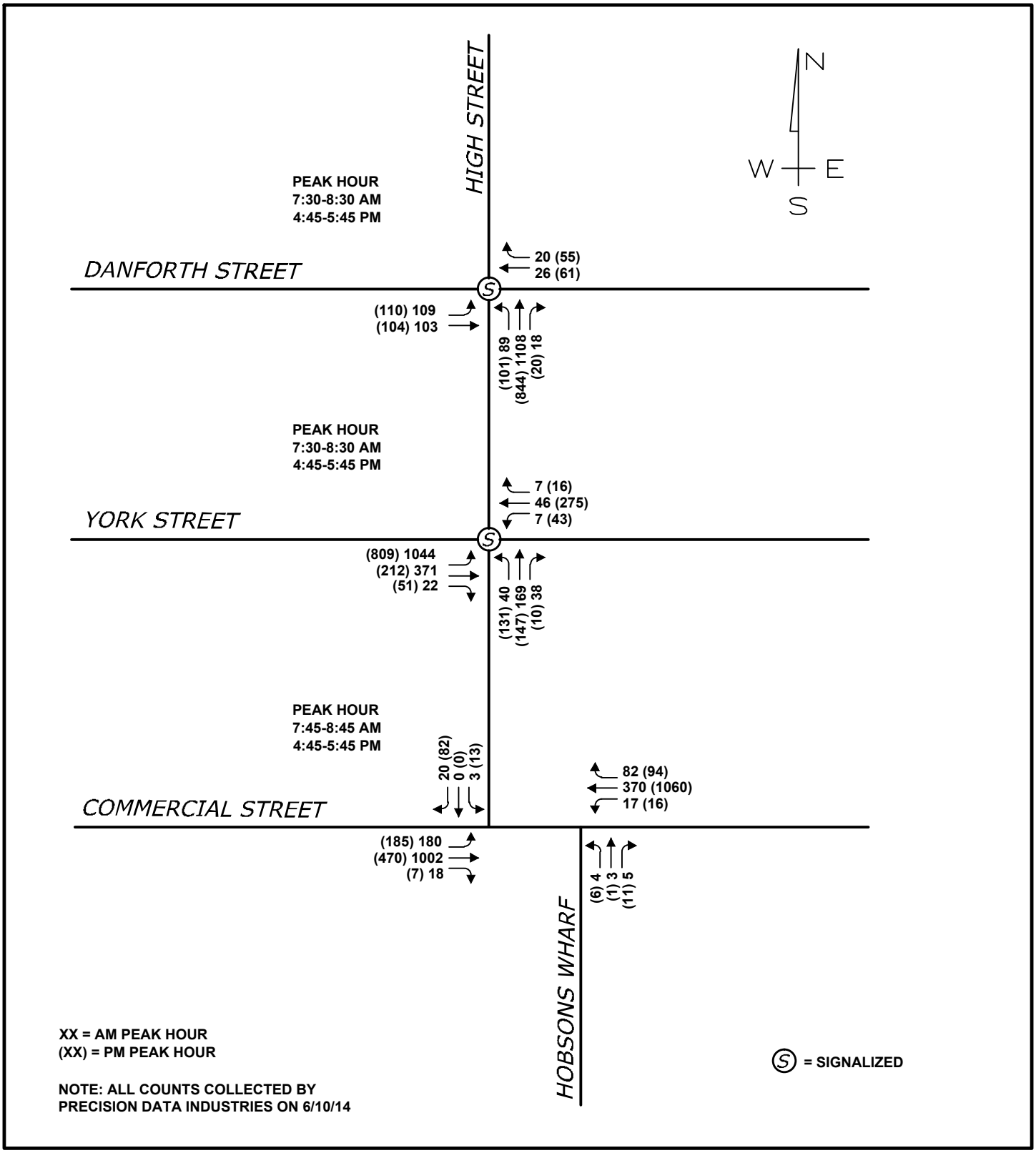
YORK STREET APARTMENTS
PORTLAND, MAINE

Design:	ET	Scale:	NONE
Draft:	LAN	Date:	JULY 2015
Checked:	RED	File Name:	3018-TRAFF.dwg

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Raw Data

Figure No. 2



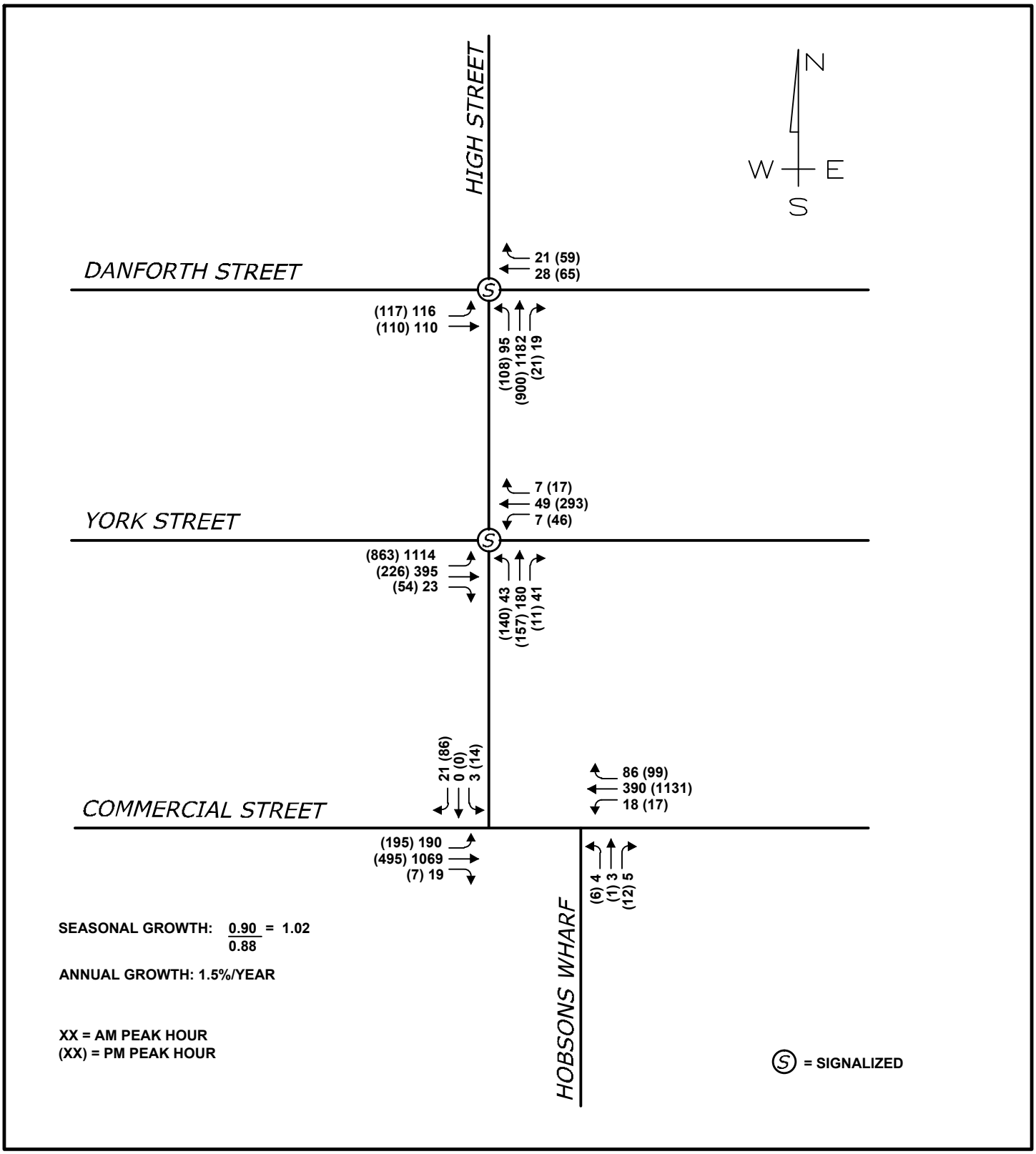
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PORTLAND, MAINE

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2017 Predevelopment DHV

Figure No. 3



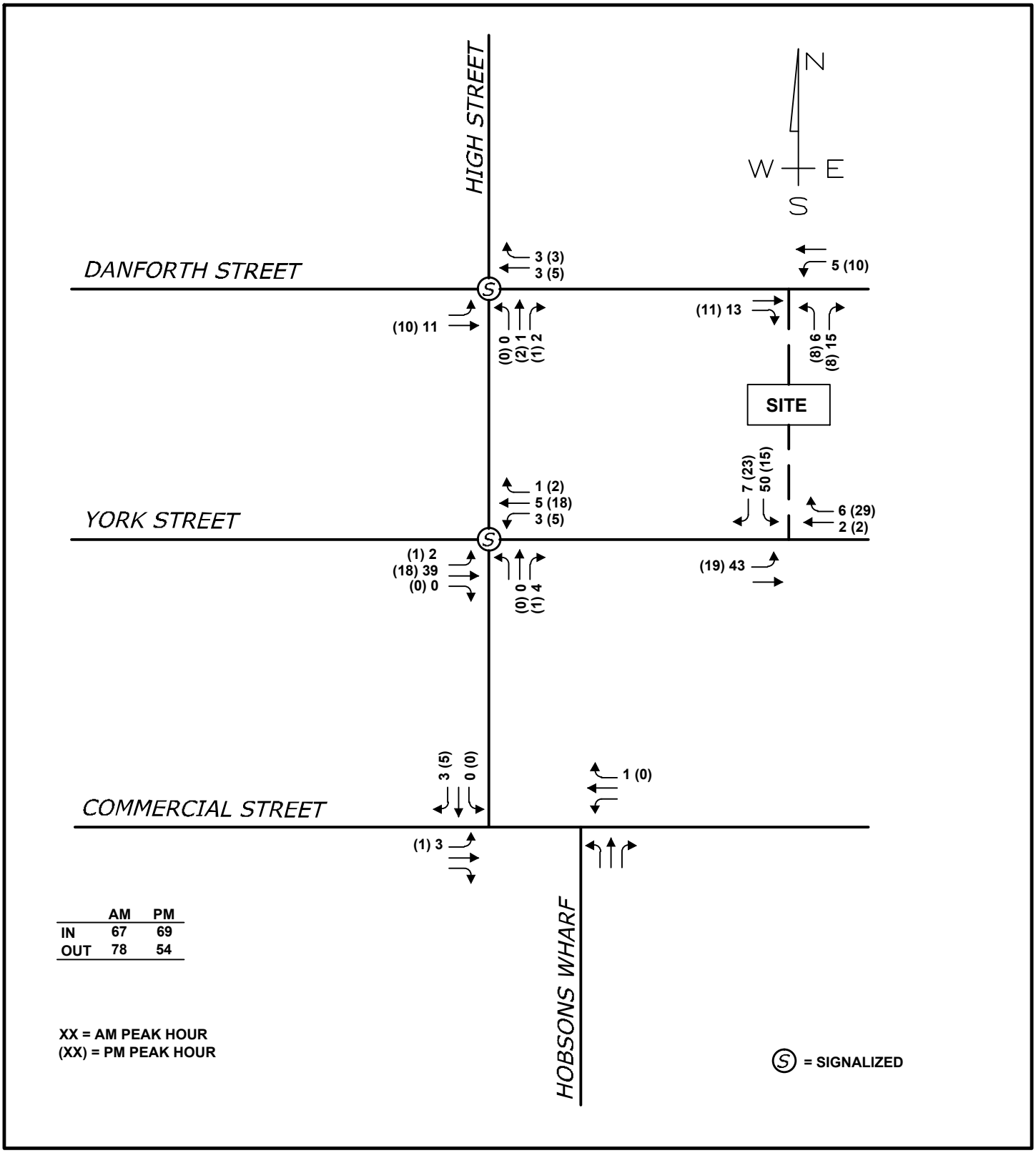
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PORTLAND, MAINE

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Trip Distribution and Assignment

Figure No. 4



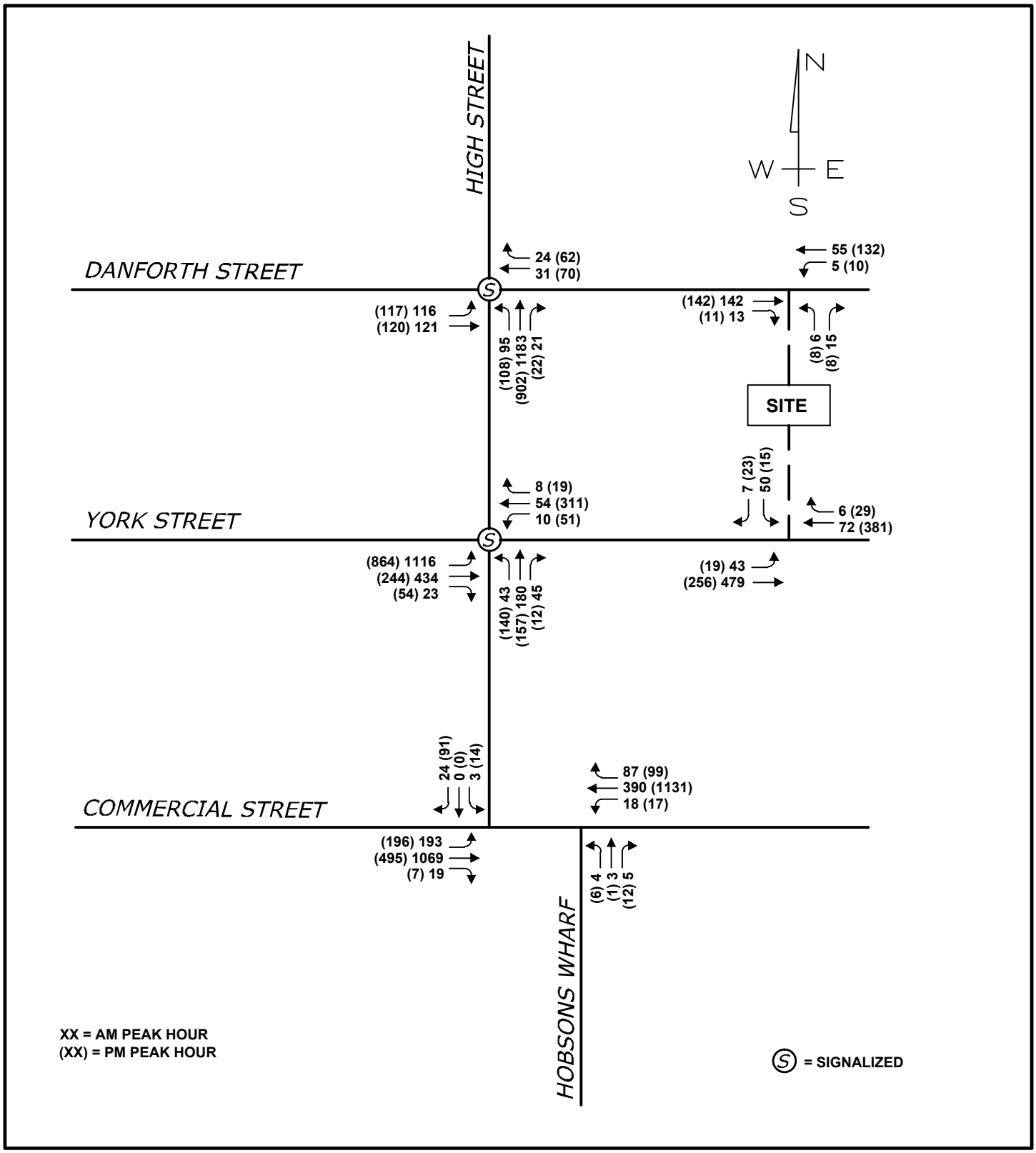
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PORTLAND, MAINE

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2017 Postdevelopment DHV

Figure No. 5



YORK STREET APARTMENTS
PORTLAND, MAINE

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Appendix B
Trip Generation Calculations

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JOB 3018 03
SHEET NO. ____ OF ____
CALCULATED BY ET DATE 7/14/15
CHECKED BY ____ DATE ____
SCALE ____

Condo trip Generation

Source: ITE Trip Generation Manual 9th Edition
LUC 232 - High-Rise Residential Condominium/Townhouse

Assumptions:
- All rooms occupied
- 63 dwelling units

Weekday AM Peak Hour Adjacent Street Traffic
Average Rate: 0.34 × 63 = 22
Equation: 0.29(63) + 28.86 = 47
~~34~~ 35 trip ends

19% in – 7 trip ends
81% out – 27 trip ends

Weekday PM Peak Hour Adjacent Street Traffic
Average Rate: 0.38 × 63 = 24
Equation: 0.34(63) + 15.47 = 37
31 trip ends

62% in – 19 trip ends
38% out – 12 trip ends

Weekday AM Peak Hour Generator
Average Rate: 0.34 × 63 = 22
Equation: 0.30 × (63) + 25.33 = 44
33 trip ends

17% in – 6 trip ends
83% out – 27 trip ends

Weekday PM Peak Hour Generator
Average Rate: 0.38 × 63 = 24
Equation: Ln(T) = 0.84 Ln(63) + 0.07 = 35
~~29~~ 30 trip ends

68% in – ~~20~~ 21 trip ends
32% out – 9 trip ends

JN: 3018
Project Description: Mixed Use
Project Location: Portland, Maine
Date: August 10, 2015

Gorrill-Palmer Consulting Engineers, Inc.
P.O. Box 1237
15 Shaker Road
Gray, Maine 04039

High Turnover (Sit Down) Restaurant
Land Use Code (LUC) 932

Gross Floor Area (ft^2): 7,000

Time Period	ITE Trip Rate (Average Rate)	# of Sources	Trip Ends	Directional Split IN	Directional Split OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 127.15 (X)	14	890	50%	50%	445	445	N/A
AM Peak Adjacent Street	T = 10.81 (X)	24	**76**	50%	50%	38	38	N/A
PM Peak Adjacent Street	T = 9.85 (X)	60	**69**	60%	40%	41	28	N/A
AM Peak of Generator	**T = 13.33 (X)**	**25**	**93**	**50%**	**50%**	**47**	**46**	**N/A**
PM Peak of Generator	**T = 18.49 (X)**	**31**	**129**	**55%**	**45%**	**71**	**58**	**N/A**
Saturday	T = 158.37 (X)	2	1109	50%	50%	555	554	N/A
Saturday Peak Hour of Gen.	T = 14.07 (X)	8	**98**	65%	35%	64	34	N/A

JN: 3018
Project Description: York St Apartments
Project Location: Portland
Date: 9/15/2015

Gorrill-Palmer Consulting Engineers, Inc.
P.O. Box 1237
15 Shaker Road
Gray, Maine 04039

Specialty Retail Center
Land Use Code (LUC) 826

Gross Floor Area (ft^2): 9,955

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 44.32 (X)	441	4	50%	50%	221	220	---
Peak Hour of Adjacent Street Traffic 7-9 AM**	T = 0.74 (X)	7	N/A	60%	40%	4	3	
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.71 (X)	27	5	45%	55%	12	15	---
AM Peak Hour of Generator	T = 6.84 (X)	68	4	50%	50%	34	34	---
PM Peak Hour of Generator	T = 5.02 (X)	50	3	55%	45%	28	22	---
Saturday	T = 42.04 (X)	419	3	50%	50%	210	209	---
Saturday Peak Hour of Gen.***	T = 6.63 (X)	66	3	50%	50%	33	33	---

**Based on ratio of AM/PM traffic for LUC 820, Shopping Center and applied to 814 PM rate.
***Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center
* Percentages rounded to nearest 5%

Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 42.78 (X) + 37.66	464	4	50%	50%	232	232	0.69
Peak Hour of Adjacent Street Traffic 7-9 AM	---	---	---	---	---	---	---	---
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 2.40 (X) + 21.48	45	5	45%	55%	20	25	0.98
AM Peak Hour of Generator	T = 4.91 (X) + 115.59	164	4	50%	50%	82	82	0.90
PM Peak Hour of Generator	---	---	---	---	---	---	---	---
Saturday	---	---	---	---	---	---	---	---
Saturday Peak Hour of Gen.	---	---	---	---	---	---	---	---

* Percentages rounded to nearest 5%
(---) Not Given

AM Peak of Adjacent Street 7-9 AM**	T = 0.275 (PM Peak Hour)	14	60%	40%	8	6
Saturday Peak Hour***	T = 1.325 (PM Peak Hour)	66	50%	50%	33	33

**AM Peak Hour of Adjacent Street comes from a ration of PM to AM trip rates from LUC 820 - Shopping Center
***Saturday Peak Hour comes from a ratio of PM to Saturday trip rates from LUC 820 - Shopping Center

PM Adj St = $\frac{27 + 45}{2}$ = 37 TE

AM Adj St = $\frac{37}{50} = \frac{X}{68}$ → X = 50 Trip Ends

(PM)

JN: 3018
Project Description: Condos / Retail
Project Location: Portland, Maine
Date: 7/21/2015

Gorrill-Palmer Consulting Engineers, Inc.
P.O. Box 1237
15 Shaker Road
Gray, Maine 04039

Convenience Market with Gasoline Pumps
Land Use Code (LUC) 853

Vehicle Fueling Positions: 4

Time Period	ITE Trip Rate (Average Rate)	# of Sources	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 542.60 (X)	10	2170	50%	50%	1085	1085	N/A
AM Peak Hour of Adjacent Street Traffic	T = 16.57 (X)	28	66	50%	50%	33	33	N/A
PM Peak Hour of Adjacent Street Traffic	T = 19.07 (X)	54	76	50%	50%	38	38	N/A
AM Peak Hour of Generator	T = 17.03 (X)	26	68	50%	50%	34	34	N/A
PM Peak Hour of Generator	T = 19.98 (X)	46	80	50%	50%	40	40	N/A
Saturday	T = 204.47 (X)	3	818	50%	50%	409	409	N/A
Sat Peak Hr Gen	T = 10.00 (X)	2	40	50%	50%	20	20	NA
Sunday	T = 166.88 (X)	3	668	50%	50%	334	334	N/A

* Percentages rounded to nearest 5%

Gross Floor Area (ft^2): 1,350

Time Period	ITE Trip Rate (Average Rate)	# of Sources	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 845.60 (X)	10	1142	50%	50%	571	571	N/A
AM Peak Hour of Adjacent Street Traffic	T = 40.92 (X)	53	55	50%	50%	28	27	N/A
PM Peak Hour of Adjacent Street Traffic	T = 50.92 (X)	78	69	50%	50%	35	34	N/A
AM Peak Hour of Generator	T = 42.86 (X)	34	58	50%	50%	29	29	N/A
PM Peak Hour of Generator	T = 62.57 (X)	46	84	50%	50%	42	42	N/A
Saturday	T = 1448.33 (X)	3	1955	50%	50%	978	977	N/A
Sat Peak Hr Gen	T = 45.94 (X)	3	62	50%	50%	31	31	N/A
Sunday	T = 1182.08 (X)	3	1596	50%	50%	798	798	N/A

* Percentages rounded to nearest 5%

Average

Time Period	ITE Trip Rate (Average Rate)	# of Sources	Trip Ends	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	N/A	N/A	1623	50%	50%	823	823	N/A
AM Peak Hour of Adjacent Street Traffic	N/A	N/A	61	50%	50%	30	31	N/A
PM Peak Hour of Adjacent Street Traffic	N/A	N/A	73	50%	50%	36	37	N/A
AM Peak Hour of Generator	N/A	N/A	63	50%	50%	32	31	N/A
PM Peak Hour of Generator	N/A	N/A	82	50%	50%	41	41	N/A
Saturday	N/A	N/A	1387	50%	50%	693	694	N/A
Sat Peak Hr Gen	N/A	N/A	51	50%	50%	26	25	N/A
Sunday	N/A	N/A	1132	50%	50%	566	566	N/A

* Percentages rounded to nearest 5%

JN: 3018
Project Description: Condos / Retail
Project Location: Portland, Maine
Date: July 21, 2015

Gorrill-Palmer Consulting Engineers, Inc.
P.O. Box 1237
15 Shaker Road
Gray, Maine 04039

High Turnover (Sit Down) Restaurant
Land Use Code (LUC) 932

Gross Floor Area (ft^2): 1,300

Time Period	ITE Trip Rate (Average Rate)	# of Sources	Trip Ends	Directional Split IN	Directional Split OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 127.15 (X)	14	165	50%	50%	83	82	N/A
AM Peak Adjacent Street	T = 10.81 (X)	24	14	50%	50%	7	7	N/A
PM Peak Adjacent Street	T = 9.85 (X)	60	13	60%	40%	8	5	N/A
AM Peak of Generator	**T = 13.33 (X)**	**25**	**17**	**50%**	**50%**	**9**	**8**	**N/A**
PM Peak of Generator	**T = 18.49 (X)**	**31**	**24**	**55%**	**45%**	**13**	**11**	**N/A**
Saturday	T = 158.37 (X)	2	206	50%	50%	103	103	N/A
Saturday Peak Hour of Gen.	T = 14.07 (X)	8	18	65%	35%	12	6	N/A

JN: 3018
Project Description: Condos / Retail
Project Location: Portland, Maine
Date: July 21, 2015

Gorrill-Palmer Consulting Engineers, Inc.
P.O. Box 1237
15 Shaker Road
Gray, Maine 04039

General Office Building
Land Use Code (LUC) 710

Square Feet 9,000

Trip Ends Based on Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	OUT	Directional Distribution IN	OUT	R^2
Weekday	Ln (T) = 0.76 Ln (X) + 3.68	211	79	50%	50%	106	105	0.80
AM Peak Hour	**Ln (T) = 0.80 Ln (X) + 1.57**	**28**	**218**	**90%**	**10%**	**25**	**3**	**0.83**
PM Peak Hour	**T = 1.12 (X) + 78.45**	**89**	**236**	**15%**	**85%**	**13**	**76**	**0.82**
Saturday	T = 2.03 (X) + 31.75	50	18	50%	50%	25	25	0.66
Peak Hour of Generator			11	55%	45%	#VALUE!	#VALUE!	0.59

* Percentages rounded to nearest 5%

Trip Ends Based on Average Rate

Time Period	ITE Trip Rate	Trip Ends	Number of Studies	Directional Split * IN	OUT	Directional Distribution IN	OUT	R^2
Weekday	T = 11.03 (X)	99	79	50%	50%	50	49	---
AM Peak Hour	T = 1.56 (X)	14	218	90%	10%	13	1	---
PM Peak Hour	T = 1.49 (X)	13	236	15%	85%	2	11	---
Saturday	T = 2.46 (X)	22	18	50%	50%	11	11	---
Saturday Peak Hour of Gen.	**T = 0.43 (X)**	**4**	11	50%	50%	2	**2**	---

* Percentages rounded to nearest 5%

PM Peak Hour:	T = 1.49/1.56 (AM Peak)	27		15%	85%	4	23	0.82

$AM = \frac{28+14}{2} = 21$

$PM = \frac{27+13}{2} = 20$

Appendix C
Capacity and Queuing Analyses

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3667	3600	3477	3700	3577	3605
Vehs Exited	3642	3596	3459	3665	3555	3583
Starting Vehs	126	143	122	123	134	130
Ending Vehs	151	147	140	158	156	150
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	2	0	0	0	0
Travel Distance (mi)	3114	3068	2961	3125	3019	3057
Travel Time (hr)	148.8	145.2	139.5	151.0	143.1	145.5
Total Delay (hr)	21.6	19.9	18.4	23.3	19.5	20.5
Total Stops	2331	2189	2062	2493	2150	2243
Fuel Used (gal)	103.0	100.5	97.0	104.0	98.9	100.7

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3667	3600	3477	3700	3577	3605
Vehs Exited	3642	3596	3459	3665	3555	3583
Starting Vehs	126	143	122	123	134	130
Ending Vehs	151	147	140	158	156	150
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	2	0	0	0	0
Travel Distance (mi)	3114	3068	2961	3125	3019	3057
Travel Time (hr)	148.8	145.2	139.5	151.0	143.1	145.5
Total Delay (hr)	21.6	19.9	18.4	23.3	19.5	20.5
Total Stops	2331	2189	2062	2493	2150	2243
Fuel Used (gal)	103.0	100.5	97.0	104.0	98.9	100.7

5: High Street & Danforth Street Performance by approach

Approach	NW	NE	SW	All
Denied Del/Veh (s)	0.0	0.2	0.2	0.0
Total Del/Veh (s)	9.9	14.6	8.7	10.6
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

6: High Street & York Street Performance by approach

Approach	NB	SB	NW	All
Denied Del/Veh (s)	0.3	0.1	0.0	0.3
Total Del/Veh (s)	15.4	24.2	12.4	15.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

9: Hobson's Wharf & Commercial Street Performance by approach

Approach	NB	SB	SE	NW	All
Denied Del/Veh (s)	0.2	0.4	0.0	0.1	0.3
Total Del/Veh (s)	6.1	6.1	10.3	28.0	6.3
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	19.5
Denied Entry Before	0
Denied Entry After	0

Intersection: 5: High Street & Danforth Street

Movement	NW	NW	NW	NW	NE	SW
Directions Served	L	T	T	R	LT	TR
Maximum Queue (ft)	124	211	228	104	169	56
Average Queue (ft)	39	116	135	10	85	17
95th Queue (ft)	101	186	207	50	140	44
Link Distance (ft)		429	429		2471	896
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100			100		
Storage Blk Time (%)	0	7	12	0		
Queuing Penalty (veh)	0	7	2	0		

Intersection: 6: High Street & York Street

Movement	NB	NB	NB	SB	NW
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (ft)	311	347	175	90	169
Average Queue (ft)	124	138	108	35	84
95th Queue (ft)	240	260	191	75	148
Link Distance (ft)	2555	2555		3041	158
Upstream Blk Time (%)					1
Queuing Penalty (veh)					2
Storage Bay Dist (ft)			150		
Storage Blk Time (%)		4	1		
Queuing Penalty (veh)		17	7		

Intersection: 9: Hobson's Wharf & Commercial Street

Movement	NB	NB	SB	SB	SE	SE	NW
Directions Served	L	TR	LT	R	LT	R	LTR
Maximum Queue (ft)	94	29	203	64	30	44	44
Average Queue (ft)	40	1	33	7	4	20	9
95th Queue (ft)	77	13	137	37	19	50	33
Link Distance (ft)	2557	2557	2624		158		612
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				50		25	
Storage Blk Time (%)			4	0	5	3	
Queuing Penalty (veh)			4	0	1	0	

Network Summary

Network wide Queuing Penalty: 40

Intersection: 5: High Street & Danforth Street

Phase	2	4	8
Movement(s) Served	NWTL	NETL	SWT
Maximum Green (s)	19.0	19.0	19.0
Minimum Green (s)	4.0	4.0	4.0
Recall	None	None	None
Avg. Green (s)	16.5	10.3	10.3
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	1	19	19
Cycles @ Minimum (%)	1	1	1
Cycles Maxed Out (%)	55	4	4
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 6: High Street & York Street

Phase	1	2	5	6	8
Movement(s) Served	SBL	NBTL	NBL	SBTL	NWTL
Maximum Green (s)	4.0	31.0	12.0	23.0	22.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0
Recall	None	None	None	None	None
Avg. Green (s)	0.0	20.9	13.8	10.6	11.2
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	100	7	4	63	21
Cycles @ Minimum (%)	0	0	0	1	1
Cycles Maxed Out (%)	0	12	85	0	4
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3918	3779	3823	3974	3918	3883
Vehs Exited	3905	3745	3827	3932	3902	3863
Starting Vehs	143	143	143	146	144	141
Ending Vehs	156	177	139	188	160	164
Denied Entry Before	0	0	1	0	0	0
Denied Entry After	0	0	0	3	0	1
Travel Distance (mi)	3226	3095	3165	3287	3247	3204
Travel Time (hr)	154.7	147.8	151.2	157.9	156.2	153.6
Total Delay (hr)	22.7	21.0	21.7	23.7	23.1	22.5
Total Stops	2600	2465	2498	2664	2569	2560
Fuel Used (gal)	107.1	102.1	104.5	108.6	108.0	106.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	3918	3779	3823	3974	3918	3883
Vehs Exited	3905	3745	3827	3932	3902	3863
Starting Vehs	143	143	143	146	144	141
Ending Vehs	156	177	139	188	160	164
Denied Entry Before	0	0	1	0	0	0
Denied Entry After	0	0	0	3	0	1
Travel Distance (mi)	3226	3095	3165	3287	3247	3204
Travel Time (hr)	154.7	147.8	151.2	157.9	156.2	153.6
Total Delay (hr)	22.7	21.0	21.7	23.7	23.1	22.5
Total Stops	2600	2465	2498	2664	2569	2560
Fuel Used (gal)	107.1	102.1	104.5	108.6	108.0	106.1

5: High Street & Danforth Street Performance by approach

Approach	NW	NE	SW	All
Denied Del/Veh (s)	0.0	0.2	0.0	0.0
Total Del/Veh (s)	11.1	14.7	9.8	11.6
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

6: High Street & York Street Performance by approach

Approach	NB	SB	NW	All
Denied Del/Veh (s)	0.3	0.0	0.0	0.3
Total Del/Veh (s)	16.4	20.0	12.6	16.0
Denied Entry Before	0	0	0	0
Denied Entry After	1	0	0	1

9: Hobson's Wharf & Commercial Street Performance by approach

Approach	NB	SB	SE	NW	All
Denied Del/Veh (s)	0.2	0.4	0.0	0.1	0.3
Total Del/Veh (s)	6.0	4.7	7.0	29.2	5.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

12: Danforth Street & Site Driveway Performance by approach

Approach	NW	NE	SW	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1
Total Del/Veh (s)	2.8	1.3	0.2	1.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

14: York Street & Site Driveway Performance by approach

Approach	NB	SB	SE	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.7	0.6	8.0	2.1
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	19.8
Denied Entry Before	0
Denied Entry After	1

Intersection: 5: High Street & Danforth Street

Movement	NW	NW	NW	NW	NE	SW
Directions Served	L	T	T	R	LT	TR
Maximum Queue (ft)	124	229	249	125	135	74
Average Queue (ft)	43	130	148	20	81	30
95th Queue (ft)	108	207	220	86	131	63
Link Distance (ft)		431	431		2471	209
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100			100		
Storage Blk Time (%)	0	10	16	0		
Queuing Penalty (veh)	0	9	3	0		

Intersection: 6: High Street & York Street

Movement	NB	NB	NB	SB	SB	NW
Directions Served	L	L	TR	L	TR	LTR
Maximum Queue (ft)	257	324	175	28	101	153
Average Queue (ft)	130	149	118	5	38	86
95th Queue (ft)	221	257	196	22	77	140
Link Distance (ft)	2583	2583			257	181
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (ft)			150	75		
Storage Blk Time (%)		4	2		1	
Queuing Penalty (veh)		20	10		0	

Intersection: 9: Hobson's Wharf & Commercial Street

Movement	NB	NB	SB	SB	SE	SE	NW
Directions Served	L	TR	LT	R	LT	R	LTR
Maximum Queue (ft)	88	4	131	52	34	41	45
Average Queue (ft)	38	0	20	5	3	18	12
95th Queue (ft)	74	2	83	29	18	48	36
Link Distance (ft)	2557	2557	2624		181		514
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				50		25	
Storage Blk Time (%)			2	0	2	3	
Queuing Penalty (veh)			2	0	1	0	

Intersection: 12: Danforth Street & Site Driveway

Movement	NW	SW
Directions Served	LR	LT
Maximum Queue (ft)	44	19
Average Queue (ft)	16	1
95th Queue (ft)	42	8
Link Distance (ft)	97	628
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 14: York Street & Site Driveway

Movement	NB	SE
Directions Served	LT	LR
Maximum Queue (ft)	74	53
Average Queue (ft)	5	16
95th Queue (ft)	31	36
Link Distance (ft)	257	235
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 45

Intersection: 5: High Street & Danforth Street

Phase	2	4	8
Movement(s) Served	NWTL	NETL	SWT
Maximum Green (s)	19.0	19.0	19.0
Minimum Green (s)	4.0	4.0	4.0
Recall	None	None	None
Avg. Green (s)	17.1	11.1	11.1
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	1	13	13
Cycles @ Minimum (%)	0	1	1
Cycles Maxed Out (%)	61	9	9
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 6: High Street & York Street

Phase	1	2	5	6	8
Movement(s) Served	SBL	NBTL	NBL	SBTL	NWTL
Maximum Green (s)	4.0	31.0	12.0	23.0	22.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0
Recall	None	None	None	None	None
Avg. Green (s)	4.9	21.6	14.8	10.3	11.7
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	94	6	5	58	16
Cycles @ Minimum (%)	6	0	0	1	1
Cycles Maxed Out (%)	6	10	88	0	5
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	2	3	5	6	7	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	3888	3759	3787	3865	3870	3833
Vehs Exited	3833	3754	3771	3816	3780	3792
Starting Vehs	142	166	181	147	155	159
Ending Vehs	197	171	197	196	245	203
Denied Entry Before	0	0	1	0	0	0
Denied Entry After	3	0	1	1	0	1
Travel Distance (mi)	3900	3789	3878	3907	3841	3863
Travel Time (hr)	189.1	183.9	192.4	194.7	203.6	192.8
Total Delay (hr)	29.9	29.9	34.2	35.2	46.6	35.2
Total Stops	2598	2586	2607	2630	2744	2632
Fuel Used (gal)	127.7	123.3	127.6	128.2	129.7	127.3

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	2	3	5	6	7	Avg
Vehs Entered	3888	3759	3787	3865	3870	3833
Vehs Exited	3833	3754	3771	3816	3780	3792
Starting Vehs	142	166	181	147	155	159
Ending Vehs	197	171	197	196	245	203
Denied Entry Before	0	0	1	0	0	0
Denied Entry After	3	0	1	1	0	1
Travel Distance (mi)	3900	3789	3878	3907	3841	3863
Travel Time (hr)	189.1	183.9	192.4	194.7	203.6	192.8
Total Delay (hr)	29.9	29.9	34.2	35.2	46.6	35.2
Total Stops	2598	2586	2607	2630	2744	2632
Fuel Used (gal)	127.7	123.3	127.6	128.2	129.7	127.3

5: High Street & Danforth Street Performance by approach

Approach	NW	NE	SW	All
Denied Del/Veh (s)	0.0	0.3	0.2	0.1
Total Del/Veh (s)	9.3	11.2	7.7	9.5
Stop Delay (hr)	1.6	0.5	0.2	2.4
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

6: High Street & York Street Performance by approach

Approach	NB	SB	NW	All
Denied Del/Veh (s)	0.2	0.3	0.4	0.2
Total Del/Veh (s)	25.7	55.7	22.1	31.3
Stop Delay (hr)	5.2	5.0	1.7	11.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

9: Hobson's Wharf & Commercial Street Performance by approach

Approach	NB	SB	SE	NW	All
Denied Del/Veh (s)	0.1	1.9	0.3	0.1	1.2
Total Del/Veh (s)	10.7	10.6	89.0	83.9	14.7
Stop Delay (hr)	1.7	0.1	2.3	0.4	4.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	1	0	0	1

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	30.9
Stop Delay (hr)	18.9
Denied Entry Before	0
Denied Entry After	1

Intersection: 5: High Street & Danforth Street

Movement	NW	NW	NW	NW	NE	SW
Directions Served	L	T	T	R	LT	TR
Maximum Queue (ft)	124	165	171	122	148	77
Average Queue (ft)	40	95	110	13	67	32
95th Queue (ft)	89	152	166	60	118	61
Link Distance (ft)		428	428		629	590
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100			100		
Storage Blk Time (%)	0	4	8	0		
Queuing Penalty (veh)	0	5	2	0		

Intersection: 6: High Street & York Street

Movement	NB	NB	NB	SB	NW
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (ft)	395	633	175	660	177
Average Queue (ft)	148	175	104	229	123
95th Queue (ft)	295	401	199	649	180
Link Distance (ft)	4323	4323		4420	158
Upstream Blk Time (%)					3
Queuing Penalty (veh)					10
Storage Bay Dist (ft)			150		
Storage Blk Time (%)		7	6		
Queuing Penalty (veh)		18	27		

Intersection: 9: Hobson's Wharf & Commercial Street

Movement	NB	NB	SB	SB	SE	NW
Directions Served	L	TR	LT	R	LTR	LTR
Maximum Queue (ft)	233	69	138	66	166	92
Average Queue (ft)	98	2	25	7	88	23
95th Queue (ft)	186	36	91	36	173	64
Link Distance (ft)	2234	2234	2856		158	610
Upstream Blk Time (%)					11	
Queuing Penalty (veh)					11	
Storage Bay Dist (ft)				50		
Storage Blk Time (%)			1	0		
Queuing Penalty (veh)			1	5		

Network Summary

Network wide Queuing Penalty: 79

Intersection: 5: High Street & Danforth Street

Phase	2	4	8
Movement(s) Served	NWTL	NETL	SWT
Maximum Green (s)	19.0	19.0	19.0
Minimum Green (s)	4.0	4.0	4.0
Recall	None	None	None
Avg. Green (s)	14.9	10.2	10.2
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	4	12	12
Cycles @ Minimum (%)	0	2	2
Cycles Maxed Out (%)	37	5	5
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 6: High Street & York Street

Phase	1	2	5	6	8
Movement(s) Served	SBL	NBTL	NBL	SBTL	NWTL
Maximum Green (s)	4.0	31.0	8.0	29.0	22.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0
Recall	None	None	None	None	None
Avg. Green (s)	0.0	38.3	8.2	22.3	15.7
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	100	8	3	7	8
Cycles @ Minimum (%)	0	0	0	0	0
Cycles Maxed Out (%)	0	75	93	33	15
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	2	3	5	6	7	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	4697	4719	4600	4600	4583	4640
Vehs Exited	4511	4707	4576	4606	4553	4588
Starting Vehs	168	176	153	181	184	170
Ending Vehs	354	188	177	175	214	221
Denied Entry Before	1	3	0	0	0	0
Denied Entry After	0	0	1	0	0	0
Travel Distance (mi)	3946	4044	3996	3948	3907	3968
Travel Time (hr)	221.5	201.1	213.0	192.1	191.2	203.8
Total Delay (hr)	60.1	36.4	50.3	31.1	31.4	41.9
Total Stops	3012	2896	2967	2743	2622	2848
Fuel Used (gal)	135.3	133.8	134.6	128.9	128.0	132.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	2	3	5	6	7	Avg
Vehs Entered	4697	4719	4600	4600	4583	4640
Vehs Exited	4511	4707	4576	4606	4553	4588
Starting Vehs	168	176	153	181	184	170
Ending Vehs	354	188	177	175	214	221
Denied Entry Before	1	3	0	0	0	0
Denied Entry After	0	0	1	0	0	0
Travel Distance (mi)	3946	4044	3996	3948	3907	3968
Travel Time (hr)	221.5	201.1	213.0	192.1	191.2	203.8
Total Delay (hr)	60.1	36.4	50.3	31.1	31.4	41.9
Total Stops	3012	2896	2967	2743	2622	2848
Fuel Used (gal)	135.3	133.8	134.6	128.9	128.0	132.1

5: High Street & Danforth Street Performance by approach

Approach	NW	NE	SW	All
Denied Del/Veh (s)	0.0	0.3	0.0	0.0
Total Del/Veh (s)	9.3	11.6	7.3	9.4
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

6: High Street & York Street Performance by approach

Approach	NB	SB	NW	All
Denied Del/Veh (s)	0.2	0.3	0.2	0.2
Total Del/Veh (s)	40.9	56.6	21.9	41.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

9: Hobson's Wharf & Commercial Street Performance by approach

Approach	NB	SB	SE	NW	All
Denied Del/Veh (s)	0.1	1.8	1.8	0.1	1.2
Total Del/Veh (s)	11.6	11.0	106.1	85.9	16.4
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

12: Danforth Street & Site Driveway Performance by approach

Approach	NW	NE	SW	All
Denied Del/Veh (s)	0.1	0.0	0.2	0.1
Total Del/Veh (s)	3.7	1.2	0.3	0.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

18: York Street & Site Driveway Performance by approach

Approach	NB	SB	SE	All
Denied Del/Veh (s)	0.2	0.3	0.1	0.3
Total Del/Veh (s)	0.7	0.4	5.6	0.7
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	30.7
Denied Entry Before	0
Denied Entry After	0

Intersection: 5: High Street & Danforth Street

Movement	NW	NW	NW	NW	NE	SW
Directions Served	L	T	T	R	LT	TR
Maximum Queue (ft)	121	177	186	105	156	86
Average Queue (ft)	35	91	106	14	70	35
95th Queue (ft)	79	150	166	61	**121**	**68**
Link Distance (ft)		433	433		629	175
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100			**100**		
Storage Blk Time (%)	0	3	7	0		
Queuing Penalty (veh)	0	4	2	0		

Intersection: 6: High Street & York Street

Movement	NB	NB	NB	SB	SB	NW
Directions Served	L	L	TR	L	TR	LTR
Maximum Queue (ft)	797	824	175	100	646	174
Average Queue (ft)	240	266	123	47	219	122
95th Queue (ft)	701	752	212	110	605	175
Link Distance (ft)	4323	4323			4323	158
Upstream Blk Time (%)						3
Queuing Penalty (veh)						8
Storage Bay Dist (ft)			150	75		
Storage Blk Time (%)		9	16	12	29	
Queuing Penalty (veh)		27	70	40	15	

Intersection: 9: Hobson's Wharf & Commercial Street

Movement	NB	NB	SB	SB	SE	NW
Directions Served	L	TR	LT	R	LTR	LTR
Maximum Queue (ft)	204	149	305	62	169	82
Average Queue (ft)	96	8	31	7	99	22
95th Queue (ft)	176	82	147	36	184	58
Link Distance (ft)	2233	2233	2856		158	521
Upstream Blk Time (%)					19	
Queuing Penalty (veh)					20	
Storage Bay Dist (ft)				50		
Storage Blk Time (%)			1	0		
Queuing Penalty (veh)			1	2		

Intersection: 12: Danforth Street & Site Driveway

Movement	NW	SW
Directions Served	LR	LT
Maximum Queue (ft)	35	23
Average Queue (ft)	15	1
95th Queue (ft)	40	12
Link Distance (ft)	135	360
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 18: York Street & Site Driveway

Movement	NB	SE
Directions Served	LT	LR
Maximum Queue (ft)	82	36
Average Queue (ft)	11	16
95th Queue (ft)	47	34
Link Distance (ft)	361	259
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 188

Intersection: 5: High Street & Danforth Street

Phase	2	4	8
Movement(s) Served	NWTL	NETL	SWT
Maximum Green (s)	19.0	19.0	19.0
Minimum Green (s)	4.0	4.0	4.0
Recall	None	None	None
Avg. Green (s)	14.4	10.4	10.4
g/C Ratio	-0.01	-0.01	-0.01
Cycles Skipped (%)	6	13	13
Cycles @ Minimum (%)	0	3	3
Cycles Maxed Out (%)	30	6	6
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 6: High Street & York Street

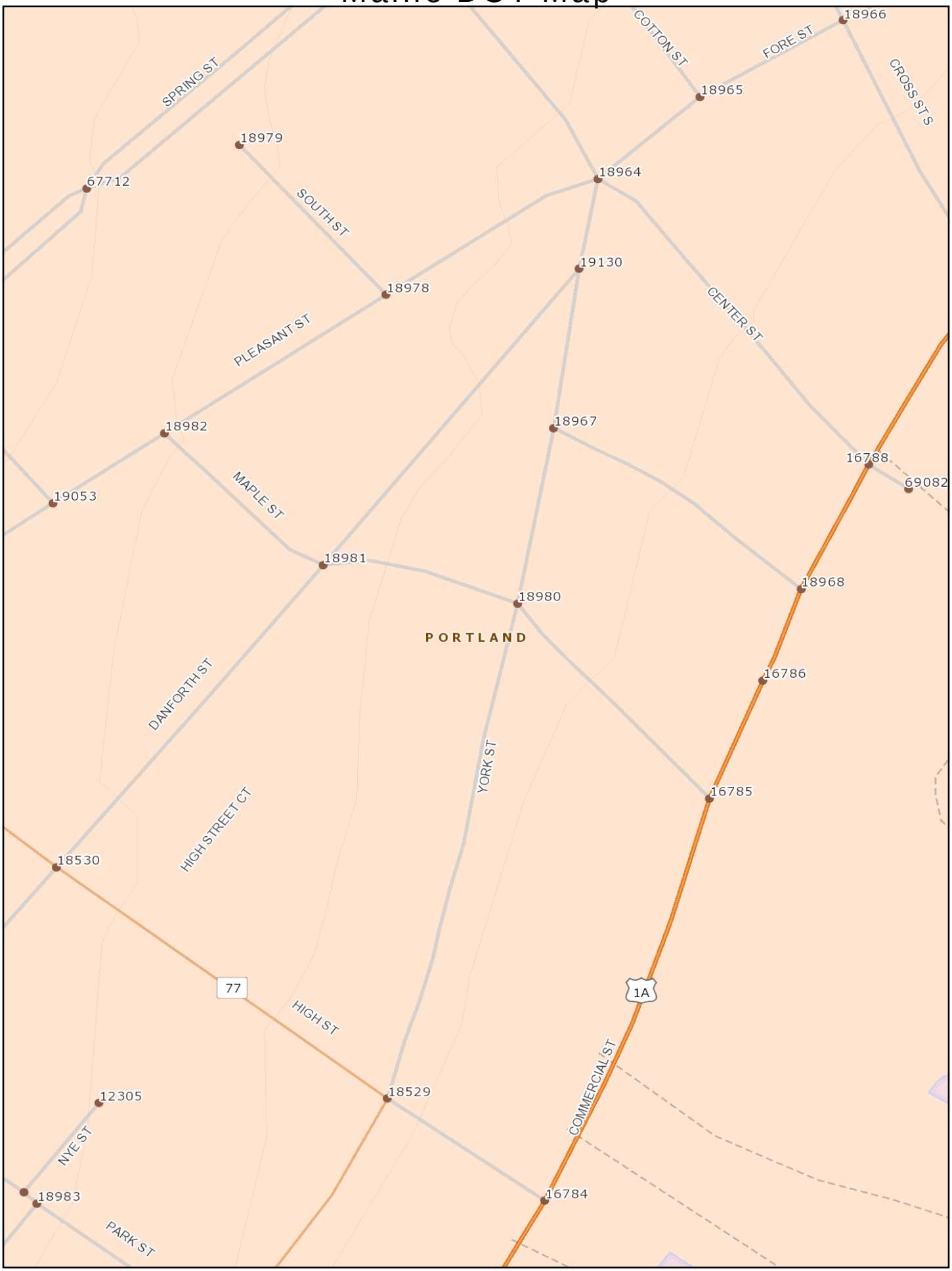
Phase	1	2	5	6	8
Movement(s) Served	SBL	NBTL	NBL	SBTL	NWTL
Maximum Green (s)	4.0	31.0	8.0	29.0	22.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0
Recall	None	None	None	None	None
Avg. Green (s)	6.7	30.3	10.5	20.9	14.8
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	55	8	3	13	5
Cycles @ Minimum (%)	40	0	0	0	0
Cycles Maxed Out (%)	45	49	93	16	15
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Appendix D
MDOT Crash Data

Maine DOT Map



Map Generated on Thursday, May 21, 2015 01:48:36 PM *Map Scale 1:2127*

The Maine Department of Transportation provides this publication for information only. Reliance upon this information is at user risk. It is subject to revision and may be incomplete depending upon changing conditions. The Department assumes no liability if injuries or damages result from this information. This map is not intended to support emergency dispatch. Road names used on this map may not match official road names.

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

York St area

REPORT PARAMETERS

Year 2012, Start Month 1 through Year 2014 End Month: 12

Route: 0077W	Start Node: 18529	Start Offset: 0	☑ Exclude First Node
	End Node: 18530	End Offset: 0	☑ Exclude Last Node
Route: 0560191	Start Node: 19130	Start Offset: 0	☑ Exclude First Node
	End Node: 18530	End Offset: 0	☐ Exclude Last Node
Route: 3200508	Start Node: 19130	Start Offset: 0	☐ Exclude First Node
	End Node: 18529	End Offset: 0	☐ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
18981	0560191 - 0.10	Int of DANFORTH ST MAPLE ST	2	0	0	0	0	0	0	0.0	0.924	0.00	0.51	0.00
												Statewide Crash Rate:	0.13	
18530	0560191 - 0.20	Int of DANFORTH ST HIGH ST	9	12	0	0	1	2	9	25.0	5.720	0.70	1.14	0.00
												Statewide Crash Rate:	0.66	
19130	3200508 - 0.02	Int of DANFORTH ST YORK ST	9	1	0	0	0	0	1	0.0	2.399	0.14	1.37	0.00
												Statewide Crash Rate:	0.66	
18967	3200508 - 0.06	0509387 POR,YORK,FOUNDRY LA.	2	0	0	0	0	0	0	0.0	0.943	0.00	0.54	0.00
												Statewide Crash Rate:	0.14	
18980	3200508 - 0.10	0509400 POR,MAPLE,YORK ST.	2	3	0	0	0	0	3	0.0	1.960	0.51	0.45	1.13
												Statewide Crash Rate:	0.14	
18529	3200508 - 0.24	Int of HIGH ST YORK ST	9	14	0	0	3	2	8	38.5	4.641	1.01	1.18	0.00
												Statewide Crash Rate:	0.66	
Study Years: 3.00		NODE TOTALS:		30	0	0	4	4	21	26.7	16.587	0.60	0.80	0.76

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
18529	18530	3106683	0 - 0.10	0077W - 1.45	0.10	2	5	0	0	0	0	5	0.0	0.00451	369.61	458.42	0.00
Int of HIGH ST	YORK ST			ST RTE 77W											Statewide Crash Rate: 190.05		
18981	19130	3106832	0 - 0.10	0560191 - 0	0.10	2	2	0	0	0	0	2	0.0	0.00073	908.25	606.72	1.50
Int of DANFORTH ST	MAPLE ST			RD INV 05 60191											Statewide Crash Rate: 153.55		
18530	18981	3106686	0 - 0.10	0560191 - 0.10	0.10	2	4	0	0	0	1	2	33.3	0.00089	1490.40	583.41	2.55
Int of DANFORTH ST	HIGH ST			RD INV 05 60191											Statewide Crash Rate: 153.55		
18967	19130	194651	0 - 0.04	3200508 - 0.02	0.04	2	0	0	0	0	0	0	0.0	0.00068	0.00	1198.05	0.00
0509387 POR,YORK,FOUNDRY LA.				RD INV 3200508											Statewide Crash Rate: 359.83		
18967	18980	194650	0 - 0.04	3200508 - 0.06	0.04	2	0	0	0	0	0	0	0.0	0.00068	0.00	1198.05	0.00
0509387 POR,YORK,FOUNDRY LA.				RD INV 3200508											Statewide Crash Rate: 359.83		
18529	18980	194048	0 - 0.14	3200508 - 0.10	0.14	2	1	0	0	0	0	1	0.0	0.00269	123.92	841.83	0.00
Int of HIGH ST	YORK ST			RD INV 3200508											Statewide Crash Rate: 359.83		
Study Years: 3.00				Section Totals:	0.52		12	0	0	0	1	10	8.3	0.01018	392.88	469.08	0.84
				Grand Totals:	0.52		42	0	0	4	5	31	21.4	0.01018	1375.09	611.40	2.25

Crash Summary

Section Details

Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	Injury Crashes K	A	B	C	PD	Crash Report	Crash Date	Crash Mile Point	Injury Degree
18529	18530	3106683	0 - 0.10	0077W - 1.45	5	0	0	0	0	5	2012-25446	04/01/2012	1.47	PD
											2013-31753	12/05/2013	1.47	PD
											2012-36693	08/27/2012	1.48	PD
											2013-25538	10/11/2013	1.50	PD
											2013-22002	09/04/2013	1.51	PD
18981	19130	3106832	0 - 0.10	0560191 - 0	2	0	0	0	0	2	2014-37240	12/30/2014	0.01	PD
											2014-24871	09/13/2014	0.02	PD
18530	18981	3106686	0 - 0.10	0560191 - 0.10	4	0	0	0	1	2	2013-23652	09/23/2013	0.14	PD
											2014-32413	11/23/2014	0.17	
											2012-42952	11/05/2012	0.17	C
											2014-11220	04/15/2014	0.17	PD
18967	19130	194651	0 - 0.04	3200508 - 0.02	0	0	0	0	0	0				
18967	18980	194650	0 - 0.04	3200508 - 0.06	0	0	0	0	0	0				
18529	18980	194048	0 - 0.14	3200508 - 0.10	1	0	0	0	0	1	2014-12456	04/29/2014	0.12	PD
				Totals:	12	0	0	0	1	10				

Crash Summary II - Characteristics

Crashes by Day and Hour

	AM												PM													
	Hour of Day																									
Day Of Week	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	Un	Tot
SUNDAY	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4
MONDAY	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
TUESDAY	0	0	2	0	0	0	0	0	1	1	0	0	1	0	1	1	0	3	0	0	0	0	0	0	0	10
WEDNESDAY	0	0	0	0	0	0	1	0	1	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0	7
THURSDAY	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	6
FRIDAY	0	0	0	0	0	0	0	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
SATURDAY	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0	0	0	0	0	1	0	0	0	0	0	6
Totals	1	1	3	0	0	1	1	2	6	5	0	3	4	2	2	2	1	3	1	2	1	0	0	1	0	42

Vehicle Counts by Type

Unit Type	Total
1-Passenger Car	48
2-(Sport) Utility Vehicle	17
3-Passenger Van	3
4-Cargo Van (10K lbs or Less)	2
5-Pickup	6
6-Motor Home	0
7-School Bus	1
8-Transit Bus	0
9-Motor Coach	0
10-Other Bus	0
11-Motorcycle	0
12-Moped	0
13-Low Speed Vehicle	0
14-Autocycle	0
15-Experimental	0
16-Other Light Trucks (10,000 lbs or Less)	0
17-Medium/Heavy Trucks (More than 10,000 lbs)	4
18-ATV - (4 wheel)	0
20-ATV - (2 wheel)	0
21-Snowmobile	0
22-Pedestrian	0

Unit Type	Total
23-Bicyclist	4
24-Witness	7
25-Other	1
Total	93

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash

Driver Action at Time of Crash	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
No Contributing Action	23	19	1	0	0	0	43
Ran Off Roadway	0	0	0	0	0	0	0
Failed to Yield Right-of-Way	5	2	0	0	0	0	7
Ran Red Light	1	3	0	0	0	0	4
Ran Stop Sign	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	1	0	0	0	0	1
Exceeded Posted Speed Limit	0	0	0	0	0	0	0
Drove Too Fast For Conditions	0	0	0	0	0	0	0
Improper Turn	2	1	0	0	0	0	3
Improper Backing	1	1	0	0	0	0	2
Improper Passing	0	1	0	0	0	0	1
Wrong Way	0	0	0	0	0	0	0
Followed Too Closely	2	4	0	0	0	0	6
Failed to Keep in Proper Lane	0	0	0	0	0	0	0
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	1	3	0	0	0	0	4
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0
Over-Correcting/Over-Steering	1	0	0	0	0	0	1
Other Contributing Action	3	0	0	0	0	0	3
Unknown	1	2	0	0	0	0	3
Total	40	37	1	0	0	0	78

Crashes by Apparent Physical Condition And Driver

Apparent Physical Condition	Dr 1	Dr 2	Dr 3	Dr 4	Dr 5	Other	Total
Apparently Normal	40	35	1	0	0	4	80
Physically Impaired or Handicapped	0	0	0	0	0	0	0
Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ill (Sick)	0	0	0	0	0	0	0
Asleep or Fatigued	0	0	0	0	0	0	0
Under the Influence of Medications/Drugs/Alcohol	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total	40	35	1	0	0	4	80

Driver Age by Unit Type

Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total
09-Under	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	2	0	0	0	0	2
20-24	11	0	0	0	0	11
25-29	11	0	0	0	0	11
30-39	16	0	0	0	0	16
40-49	15	0	0	0	0	15
50-59	12	0	0	0	0	12
60-69	7	0	0	0	0	7
70-79	5	0	0	0	0	5
80-Over	1	0	0	0	0	1
Unknown	2	4	0	0	0	6
Total	82	4	0	0	0	86

Crash Summary II - Characteristics

Most Harmful Event

Most Harmful Event	Total	Most Harmful Event	Total
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	0
2-Fire / Explosion	0	39-Unknown	2
3-Immersion	0	40-Gate or Cable	0
4-Jackknife	0	41-Pressure Ridge	0
5-Cargo / Equipment Loss Or Shift	0	Total	81
6-Fell / Jumped from Motor Vehicle	0		
7-Thrown or Falling Object	0		
8-Other Non-Collision	0		
9-Pedestrian	1		
10-Pedalcycle	0		
11-Railway Vehicle - Train, Engine	0		
12-Animal	0		
13-Motor Vehicle in Transport	72		
14-Parked Motor Vehicle	6		
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0		
16-Work Zone / Maintenance Equipment	0		
17-Other Non-Fixed Object	0		
18-Impact Attenuator / Crash Cushion	0		
19-Bridge Overhead Structure	0		
20-Bridge Pier or Support	0		
21-Bridge Rail	0		
22-Cable Barrier	0		
23-Culvert	0		
24-Curb	0		
25-Ditch	0		
26-Embankment	0		
27-Guardrail Face	0		
28-Guardrail End	0		
29-Concrete Traffic Barrier	0		
30-Other Traffic Barrier	0		
31-Tree (Standing)	0		
32-Utility Pole / Light Support	0		
33-Traffic Sign Support	0		
34-Traffic Signal Support	0		
35-Fence	0		
36-Mailbox	0		
37-Other Post Pole or Support	0		

Injury Data

Severity Code	Injury Crashes	Number Of Injuries
K	0	0
A	0	0
B	4	5
C	5	6
PD	31	0
Total	40	11

Road Character

Road Grade	Total
1-Level	9
2-On Grade	28
3-Top of Hill	1
4-Bottom of Hill	4
5-Other	0
Total	42

Traffic Control Devices

Traffic Control Device	Total
1-Traffic Signals (Stop & Go)	27
2-Traffic Signals (Flashing)	4
3-Advisory/Warning Sign	0
4-Stop Signs - All Approaches	0
5-Stop Signs - Other	3
6-Yield Sign	0
7-Curve Warning Sign	0
8-Officer, Flagman, School Patrol	0
9-School Bus Stop Arm	0
10-School Zone Sign	0
11-R.R. Crossing Device	0
12-No Passing Zone	0
13-None	8
14-Other	0
Total	42

Light

Light Condition	Total
1-Daylight	28
2-Dawn	0
3-Dusk	2
4-Dark - Lighted	11
5-Dark - Not Lighted	0
6-Dark - Unknown Lighting	1
7-Unknown	0
Total	42

Crash Summary II - Characteristics

Crashes by Year and Month

Month	2012	2013	2014	Total
JANUARY	1	1	0	2
FEBRUARY	0	2	2	4
MARCH	0	1	1	2
APRIL	2	0	3	5
MAY	0	0	0	0
JUNE	1	2	1	4
JULY	0	0	0	0
AUGUST	1	0	1	2
SEPTEMBER	0	3	1	4
OCTOBER	1	3	2	6
NOVEMBER	1	0	2	3
DECEMBER	4	3	3	10
Total	11	15	16	42

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End / Sideswipe	7	0	1	14	0	1	0	0	0	0	0	0	0	23
Head-on / Sideswipe	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Intersection Movement	0	0	1	10	0	2	0	0	0	0	0	0	0	13
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	0	0	0	1	0	0	0	0	0	0	0	0	0	1
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	1	0	0	3	0	0	0	0	0	0	0	0	0	4
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	0	2	28	0	3	0	0	0	0	0	0	0	42

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	5	0	0	0	0	0	0	0	0	0	1	6
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	1	0	0	0	0	0	0	0	0	0	0	1
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	18	0	0	0	0	0	0	1	0	0	2	21
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	1	0	0	0	0	0	0	0	0	0	1	2
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	2	2
Dusk	1	0	0	0	0	0	0	0	0	0	0	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	5	5
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather / Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	1	1
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	1	0	0	0	0	1
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	26	0	0	0	0	0	1	1	0	0	0	42

GORRILL PALMER

PO Box 1237, 15 Shaker Road
Gray, Maine 04039
207.657.6910

Project: York Street Mixed Use Development
Date: November 11, 2015
Subject: Parking Evaluation
To: Barry Stowe
From: Randy Dunton, Gorrill Palmer (JN 3018)

As requested, Gorrill Palmer (GP) has evaluated potential parking demand for the proposed mixed use development. At this time, the project is proceeding with the following mixture of uses; 63 condo units, 9,955 sf Specialty Retail and 7,000 sf of Restaurant. Therefore, the parking evaluation is based on this combination of uses.

Vehicular Parking:

Typically, the overall parking demand for a mixed use development can be further reduced due to the expectation that there will be some cross use between the individual facilities. For instance, it can be assumed that some of the people living in the condos will also be those that go to the restaurant or visit the retail. To be conservative, this was only assumed at 5%.

In addition to a reduction in parking due to shared use, there is also typically a reduction in parking because the peak parking demand for all three uses are not expected to occur concurrently. For instance, the peak parking demand for the Condos would be expected to occur early in the morning and late at night, when everyone is home. This is not the same time as the peak parking demand for specialty retail which would be expected during the normal business day, or the peak parking demand for the restaurant which would be expected at the end of the business day. We have assumed a 5% reduction in overall parking demand due to off-set peaks.

The following is a summary of the vehicular parking demand:

Vehicular Parking Requirement Summary

	Parking Variable	Ordinance Requirement	Required Parking per Ordinance	Shared Use Reduction (5%) (Note 5)	Off set parking peaks (5%) (Note 5)	Reduced Parking Demand
Potential Uses						
Condos	63 Units	1 / Unit (Note 1)	63 spaces	3 spaces	3 spaces	57 spaces
Retail	9,955 sf	1 / 200 sf (Note 2)	40 spaces	2 spaces	2 spaces	36 spaces
Restaurant	7,000 sf	1 / 150 sf (Note 3)	33 spaces	2 spaces	2 spaces	29 spaces
27 High Street	2 spaces	Note 4	2 spaces	0 spaces	0 spaces	2 spaces
Total Parking Req.			**138 Spaces**	**7 spaces**	**7 spaces**	**124 spaces**

Notes:

1. The City's standard requirement for residential units is 2 spaces per unit (Sec. 14-332 (a)). However, under Sec. 14-332.2 (c) the requirement can be reduced for a development over 50,000 sf based on information submitted by the applicant and on the recommendation of the City's transportation engineer. For this analysis, we used 1 parking space per unit.

2. The first 2,000 sf of a first floor is not considered per ordinance

3. This requirement is per sf of "area not used for bulk storage or food preparation". For the purposes of this parking summary, we assumed 30% of the sf will be used for this purpose.

4. In order to accommodate fire access to the back of the building, the existing 2 parking spaces located at 27 High Street are being relocated to the parking garage.

5. City Ordinance Sec. 14-332.2 (c) and Sec. 14-343 (a) will allow for further reductions in parking demand which we have taken credit for (5% each) in the form of Shared Use and Off-Set Parking peaks.

Pre-Development Parking Demand vs. Post-Development Parking Demand:

Pre-development condition:

The existing site includes two buildings that are or were recently used as; 1,350 sf restaurant (was used as Convenience Store prior to that), a 1,300 sf restaurant and 9,000 sf of office space. Based on the City Ordinance, the existing site would require the following vehicular parking spaces:

Existing Total Required Parking Spaces

	Required Vehicular Parking Spaces
Existing Condition	
Restaurant (1,350 sf)*	7 spaces
Restaurant (1,300 sf)*	6 spaces
Office Space (9,000 sf)	23 spaces
Existing Total Required	36 spaces
Existing Spaces Available	95 spaces
Excess Parking Spaces	**59 spaces**

*Same assumptions for Restaurant in previous table

As can be seen from the summary, the site requires 36 parking spaces currently. There are approximately 95 spaces available on site currently, which leaves 59 excess parking spaces that could be rented out or used for future development in the area.

Post-development condition:

For the post-development condition, the condos were assumed to require one space per unit, and the reductions of shared use and off-set parking peaks was included. This yields a total required vehicular parking requirement of 124 spaces. The number of proposed on-site parking spaces after the development is complete is 211 spaces. Using 124 of the 211 parking spaces for the proposed uses, results in 87 excess parking spaces that could be rented out or used for future development in the area. **This is a net increase of 30 parking spaces (approximately 47% increase from pre-development) that can be used by others as a result of the proposed development.**

Bicycle Parking:

Per City Ordinance, non-residential structures are required to provide bicycle accommodations in proportion to the vehicular parking (2 bicycle spaces per 10 vehicular spaces). For this project, the non-residential vehicular parking requirement is 65 spaces. Based on that vehicular parking requirement, this project requires 13 bicycle parking spaces. For Residential Structures, the Ordinance requires two bicycle spaces for every five dwelling units. For the proposed 65 units (63 Condos + 2 added for 27 High Street), this would require 26 bicycle parking spaces, for a site total of 39 bicycle parking spaces.

Conclusion:

Based on this evaluation, approximately 124 vehicular parking spaces and 39 bicycle parking spaces are anticipated to be required to meet the City ordinance.

3. Significant Natural Features

- Data check inquiry letters containing a USGS site location map and site concept have been sent to the state wildlife agencies. Copies of the response letters are attached and indicate there are no concerns with impact to significant natural features.

    - The Maine Department of Inland Fisheries
    - The Maine Department of Inland Wildlife
    - The Maine Natural Areas Program

- The project proposes site improvements on 27 High Street which is within the Historic District. Please see the attached Historic Preservation for Certificate of Appropriateness application.

Barry Stowe

From: IFWEnvironmentalreview <IFWEnvironmentalreview@maine.gov>
Sent: Wednesday, August 05, 2015 2:33 PM
To: Barry Stowe
Subject: RE: Proposed mixed-use building and parking garage

Barry,

We have no concerns with this project as proposed. Please let me know if you need additional information.

John

John Perry
Environmental Review Coordinator
Maine Department of Inland Fisheries and Wildlife
284 State Street, 41 SHS
Augusta, Maine 04333-0041
Tel (207) 287-5254; Cell (207) 446-5145
Fax (207) 287-6395
www.mefishwildlife.com

Correspondence to and from this office is considered a public record and may be subject to a request under the Maine Freedom of Access Act. Information that you wish to keep confidential should not be included in email correspondence.

From: Barry Stowe [mailto:barrys@opechee.com]
Sent: Monday, August 03, 2015 10:59 AM
To: St.Hilaire, Lisa; IFWEnvironmentalreview
Subject: RE: Proposed mixed-use building and parking garage

Thank you Lisa. I appreciate the help

Hi John – I don't know if it matters much, but attached are the specific letters I put together for your departments.

In the future, I'll send a single email and copy you all.

Thanks,

Barry Stowe

Opechee Construction Corporation
11 Corporate Dr | Belmont | NH 03220

P (603) 527-9090 | F (603) 527-9191

barrys@opechee.com | www.opechee.com

From: St.Hilaire, Lisa [mailto:Lisa.St.Hilaire@maine.gov]
Sent: Monday, August 03, 2015 10:54 AM
To: IFWEnvironmentalreview
Cc: Barry Stowe
Subject: FW: Proposed mixed-use building and parking garage

Hi John, FYI, review in Portland.

Barry, John Perry is the environmental coordinator at MDIFW.

Thanks!

Lisa St. Hilaire

Information Manager | Maine Natural Areas Program
Department of Agriculture, Conservation and Forestry
93 State House Station | Augusta, ME 04333
PHONE 207-287-8044 | FAX 207-287-8040

From: Barry Stowe [mailto:barrys@opechee.com]
Sent: Monday, August 03, 2015 10:50 AM
To: NAP, Maine
Subject: Proposed mixed-use building and parking garage

Hello,

I tried using the online data check and didn't have success. Our IT personnel looked at the website with several different web browsers and with several different computers and determined the map "plugin" was not working. Attached you will find my request for a data check for the above referenced project. I will send a hard copy in the mail as well.

Landowner:
101 York Street, LLC
c/o Vin Veroneau, President of J.B. Brown & Sons
PO Box 207, 50 Danforth Street
Portland, ME 04112

Authorized Agent for the Landowner:

Barry Stowe

Opechee Construction Corporation
11 Corporate Dr | Belmont | NH 03220
P (603) 527-9090 | F (603) 527-9191

barrys@opechee.com | www.opechee.com

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

August 3, 2015

VIA ELECTRONIC MAIL

Barry Stowe
Opechee Construction Corporation
11 Corporate Drive
Belmont, NH 03220

Re: Rare and exemplary botanical features in proximity to: York Street Apartments Mixed Use Building and Parking Garage, Portland, Maine

Dear Mr. Stow:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received August 3, 2015 for information on the presence of rare or unique botanical features documented from the vicinity of the project site 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.

MAINE NATURAL AREAS PROGRAM
MOLLY DOCHERTY, DIRECTOR

PHONE: (207) 287-8044
FAX: (207) 287-8040
TTY: (207) 287-2213

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 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

4. Narrative describing the site.

101 York Street, LLC (a subsidiary company of J.B. Brown & Sons) is proposing a mixed-use development at the corner of York Street and High Street in the B-3 zone. The proposal is a 5-story building that will provide approximately 17,000 sq.ft. of flexible commercial on the first floor and 63 residential apartments on the upper 4 floors. Also, the development will include a 2-level parking structure with 211 total spaces in the back of the 5-story structure. All parking in the garage will be owned by the applicant and will be shared parking for tenants.

The following summarizes the proposed building floor space and quantity of parking spaces:

- 17,505 sf. - first floor flexible commercial tenant space

- 63 Residential Condominium Units
  20,015 sf - second floor with 15 units
  20,015 sf - third floor with 16 units
  20,015 sf - fourth floor with 16 units
  20,015 sf - fifth floor with 16 units

- Total gross building floor area = 97,565 sq.ft.

- Parking level 1 – 107 spaces (6 accessible)
  Parking level 2 – 104 spaces (4 accessible)
  Total Parking Spaces = 211

The project will redevelop several existing City parcels under the common ownership of J.B. Brown & Sons. The owner will consolidate the existing lots and provide a new division of lots for the redevelopment. The redevelopment will raze two existing buildings, paved & gravel parking, curb cuts, patio areas, and landscaping. As it relates to parking, 95 existing parking spaces will be redeveloped into 211 parking spaces for a net increase of 30 spaces in excess parking on the subject property.

The proposed development has frontage on York Street, High Street, Danforth Street and Maple Street. The lower level garage will have access through the mixed-use building to an existing curb cut off York Street. The upper level parking in the garage will have access from an existing curb cut and new driveway off Danforth Street. In addition, the new driveway off from Danforth Street will be shared with the existing multifamily residence at 78 Danforth Street. 78 Danforth will release their rights over the private way known as High Street Court. It should be noted that project will remove (2) existing curb cuts on York Street and (1) curb cut on High Street in the post-development condition.

The redevelopment proposal will provide significant streetscape improvements along York Street and at the intersection with High Street. Improvements will include, but not limited to, building exterior, brick sidewalks, granite curbing, curb ramps, street trees and landscaped planters. In addition, the project will provide improvements to the existing infrastructure such as a majority of stormwater runoff will now be separated from the sewer and discharged to the newly installed drainage in High Street. Also, several existing overhead electric services will be removed and the new project services will be underground.

Also, the project provides some site improvements on the 27 High Street parcel in the R-6 zone and within the Historic District. These improvements will be related to hardscape and landscape only as the existing multi-family residences will share a proposed patio space with the new condominiums.

Easements are being proposed with the abutters located 78 Danforth Street and 75 York Street. The project requires the temporary access rights for construction and permanent access rights for shared utilities and driveways.

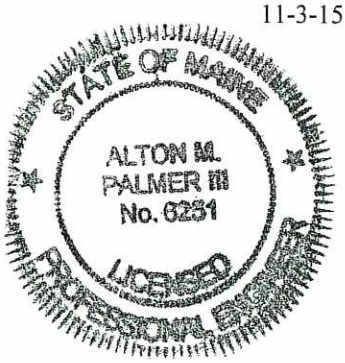
5. Stormwater Runoff Calculations

- A Stormwater Management Report has been prepared and is attached

- An Erosion and Sedimentation Control Report to comply with the Basic Standards has been prepared and is attached

STORMWATER MANAGEMENT REPORT

11-3-15



1. Overview

This Exhibit demonstrates the developer has made adequate provision for controlling Stormwater Runoff.

2. Introduction

Gorrill Palmer has been retained by 101 York Street, LLC to prepare a Stormwater Management Report for a proposed five story multi-use building and two level parking structure at the corner of York Street and High Street in Portland, Maine. The redevelopment of the site is anticipated to include a 17,505 square foot footprint five story building with a total floor area of 97,753 square feet and 213 space parking garage. Figure 1 is a map showing the project location.

3. Stormwater Management

Section 14-526.b.3.b of the Land Use Ordinance states that all development other than Level I residential shall comply with Section 5 of the Technical Manual including Basic, General, and Flooding standards as applicable to prevent and control the release of pollutants to waterbodies, watercourses, wetlands and groundwater, and reduce adverse impacts associated with increases or changes in flow, soil erosion and sedimentation.

Section 5.II.c of the Technical Manual states that Level II and III site plans shall be required to submit a stormwater management plan pursuant to the regulations of Maine DEP Chapter 500 Stormwater Management Rules, including Basic, General and Flooding standards.

4. Basic Standard

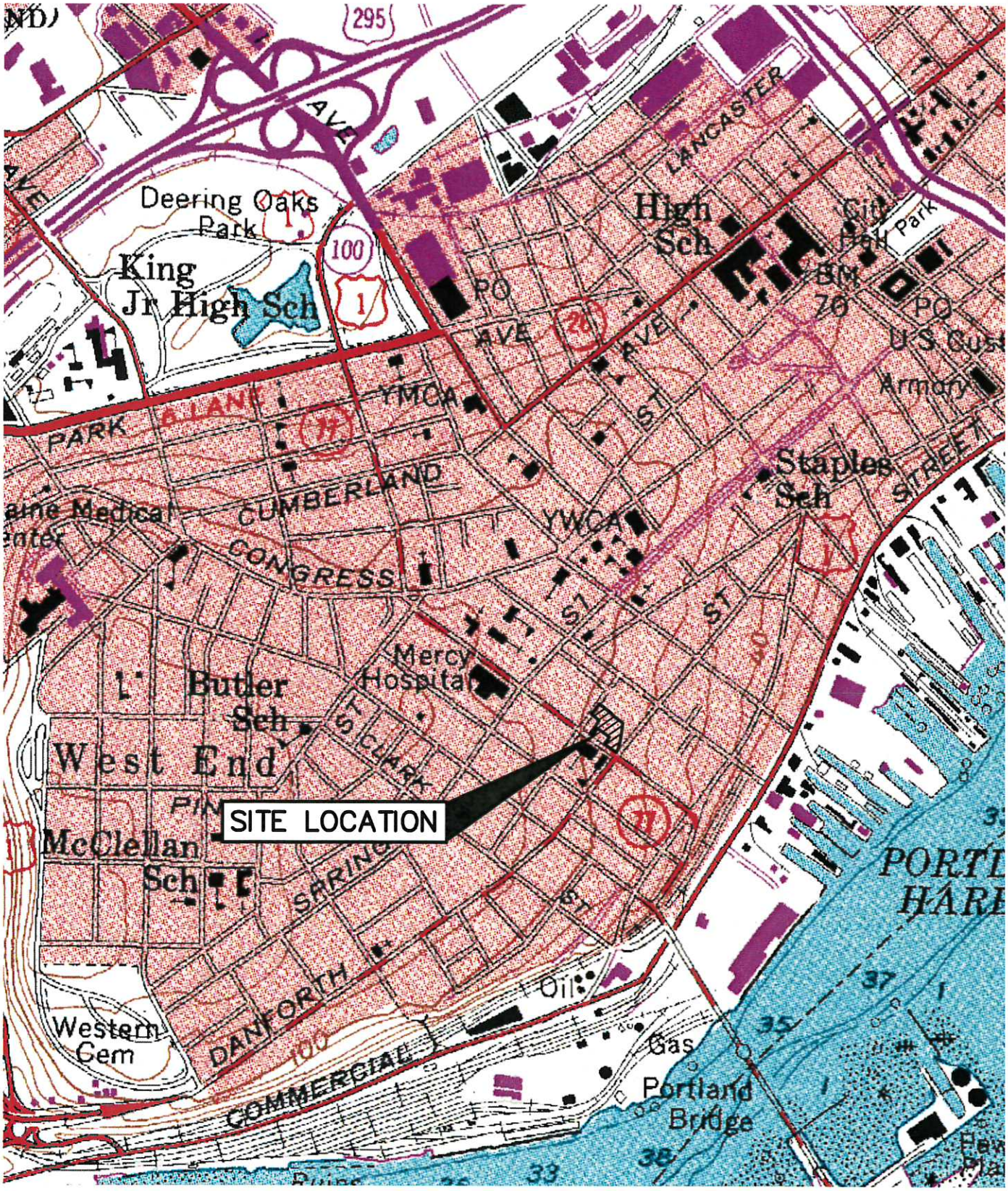
The **Basic Standard** is met by the Erosion and Sedimentation Control Report submitted with this application.

5. General Standard

The project site is not tributary to an Urban Impaired Stream. Section 5.III.4.B.1 States when general Standards must be met for areas not tributary to Urban Impaired Streams: A project disturbing one acre or more and resulting in any of the following must meet the general standards:

> 5.III.4.B.1.b - Other stream, coastal and freshwater wetland watersheds. One acre or more of impervious area, or 5 acres or more of developed area, in any other stream, coastal, or wetland watershed.

Section 5.III.4.B.3.e contains requirements for redevelopment; Stormwater Management Law project including redevelopment. For a project requiring a Stormwater Management Law permit that includes redevelopment of impervious area that was in existence as of November 16, 2005 (the effective date of Chapter 500 revisions), the redevelopment of that impervious area is not required to meet General standards provided the department determines that the new use of the existing impervious area is not likely to increase stormwater impacts resulting from the proposed project's stormwater runoff beyond the level of impact already caused by the runoff from the existing impervious area. The requirements of Appendix D must still be met, if applicable.



U.S.G.S. Location Map

York Street Condominiums - Portland, Maine

Portland West, Maine-7.5 Minute Series (Topographic)

Design: CEH	Date: AUG 2015
Draft: CG	Job No.: 3018
Checked: AMP	Scale: None
File Name: 3018–LOCATION.dwg	

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Figure
1

The Owner of the project site owns additional parcels adjacent to the site. The proposed disturbed area includes portions of these adjacent properties as well as area within the City right-of-way. The proposed project will disturb approximately 80,670 sf (1.85 acres) and is a redevelopment of an existing developed site. The project will result in an impervious area of approximately 66,072 sf (1.52 acres) of which 1,236 sf (0.03 acres) is new impervious area.

The following table presents a comparison of the predevelopment and post development land cover.

Table 1		
	Predevelopment	**Post Development**
Roof/Walkway	9,659 sf	29,354 sf
Impervious Parking/Drives	55,176.9 sf	36,717.7 sf
Total Impervious	64,835.9 sf	66,071.7 sf
Vegetated	12,674.5 sf	11,438.7 sf
Total Area	77,510.4 sf	77,510.4 sf

As can be seen from the table above, the area of Impervious Parking/Drives has been reduced in the post development condition by 18,459.2 sf, while the area of roof and walkways has increased in the post development condition by 19,695 sf. The reduction in Parking/Drives area will result in a reduction of the pollutant load from the site and therefore is not likely to increase stormwater impacts from the project site. See surface cover plans in Attachment A. Since the total post development impervious area increases by 1,236 sf, the Applicant proposes to treat an equivalent area of impervious surface in a bioretention cell proposed west of the parking garage. Runoff from approximately 2,658 sf of impervious area and 5,438 of vegetated area is tributary to the proposed bioretention cell.

Bioretention Cells are designed to store the first flush of stormwater runoff and filter the runoff through the soil media. Plantings within the bioretention cell assist in cleansing the runoff through root uptake. The runoff is allowed to pond up to 6" within the bioretention cell. Treatment volume within the bioretention cell is required for 1" of runoff from impervious surfaces and 0.4" of runoff from vegetated surfaces. Runoff from larger storms will flow into the catch basin and be conveyed through the strormwater system as shown in the plan set. A valve will be placed on the bioretention cell filter underdrain to regulate the outflow through the soil media. The valve will be field adjusted to maintain the outflow time between 24 and 48 hours. Yearly maintenance of the bioretention cell will include monitoring the outflow after a rainfall event to ensure the outflow time is within the required parameters. The stormwater inspection and maintenance plan is located in the Erosion and Sedimentation Control Report. In accordance with MDEP standards, the filter media will be a layered system consisting of 12" of sand and 6" of loamy topsoil with a transition layer of 2" of the topsoil rototilled into the sand layer. The surface area of the filter media is required to be 7% of the tributary impervious area and 3% of the tributary vegetated area.

The following table presents the Bioretention Cell information:

Table 5		
Proposed Bioretention Cell		
	Required	**Provided**
Impervious Area		2,658 sq. ft.
Developed Area (non-impervious)		5,438 sq. ft.
Treatment Volume	402.8 cu. ft.	440 cu. ft.
Filter Surface Area		18,992 sq. ft.
7%(imp. Area) +3%(landscaped Area)	349.2 sq. ft.	787.8 sq. ft.
Cell Base Elevation		42.25 ft.
Channel Protection Volume elevation		42.75 ft.

As can be seen from the table above, the bioretention cell provides the required treatment volume and surface area. See WQ map in Attachment A.

The project is a redevelopment of a site with impervious area in existence as of November 16, 2005. The project results in approximately 1,236 sf of new impervious area and proposes treatment of runoff from approximately 2,658 sf of impervious area and 5,438 sf of vegetated area. Since the project is a redevelopment which will not increase stormwater impacts and treats runoff from 2,658 sf of impervious area, the General Standards have been met.

Due to the elevation constraints of the site, the stormdrain system discharge from the site has been directed to two outlet points. The proposed building roof drain, storm drain from the upper parking level, and foundation drain from the northwest side of the building are proposed to be connected to the City storm drain system in High Street. The site stormdrain will connect to the existing catch basin at the northerly corner of High Street and York Street.

The stormdrain systems that pick up runoff from the lower areas of the site cannot be directed to the High Street catch basin since the invert of the High Street system is higher than the inverts of the site drainage system. The stormdrain outlet from catch basin 6, the lower level of the proposed parking, and the foundation drain from the easterly side of the proposed building have proposed connections to the combined sewer in York Street as shown on the plans. The applicant proposes two connections to the York Street sewer. The foundation drain will be connected separately and will have a check valve on the outlet pipe. The lower level parking drainage and catch basin 6 outlet will be combined and connected to the York Street sewer. The proposed stormdrain outlet pipes will have a check valve installed. The lower level parking stormwater system will include an oil/water separator.

6. Flooding Standard

Section 5.III.4.E states: If required, the flooding standard applies in addition to the basic standards, general standards, phosphorus standards and urban impaired stream standards.

When the flooding standard must be met: If a project results in three acres or more of impervious area or 20 acres or more of developed area, requires review pursuant to the Site Law, or is a Site Law modification of any size, the flooding standard must be met.

The project results in a total of 66,072 sf (1.52 acres) of impervious area and 80,670 sf (1.85 acres) of developed area, therefore the flooding standard does not apply. The 1,236 sf of new impervious area is believed to be an insignificant increase in impervious surface. The insignificant increase in impervious surface along with attenuation within the proposed bioretention cell ensures that the project will not have an adverse effect on downstream areas.

Since the proposed impervious and developed area are less than the Chapter 500 thresholds and the increase in new impervious area of 1,236 sf is insignificant, the Flooding Standard is met.

7. Additional Permits

The disturbed area is greater than one acre, therefore a Construction General Permit is required. Since the project will not result in excess of 3 acres of new non-vegetated surfaces, a Site Location of Development Act Permit is not required.

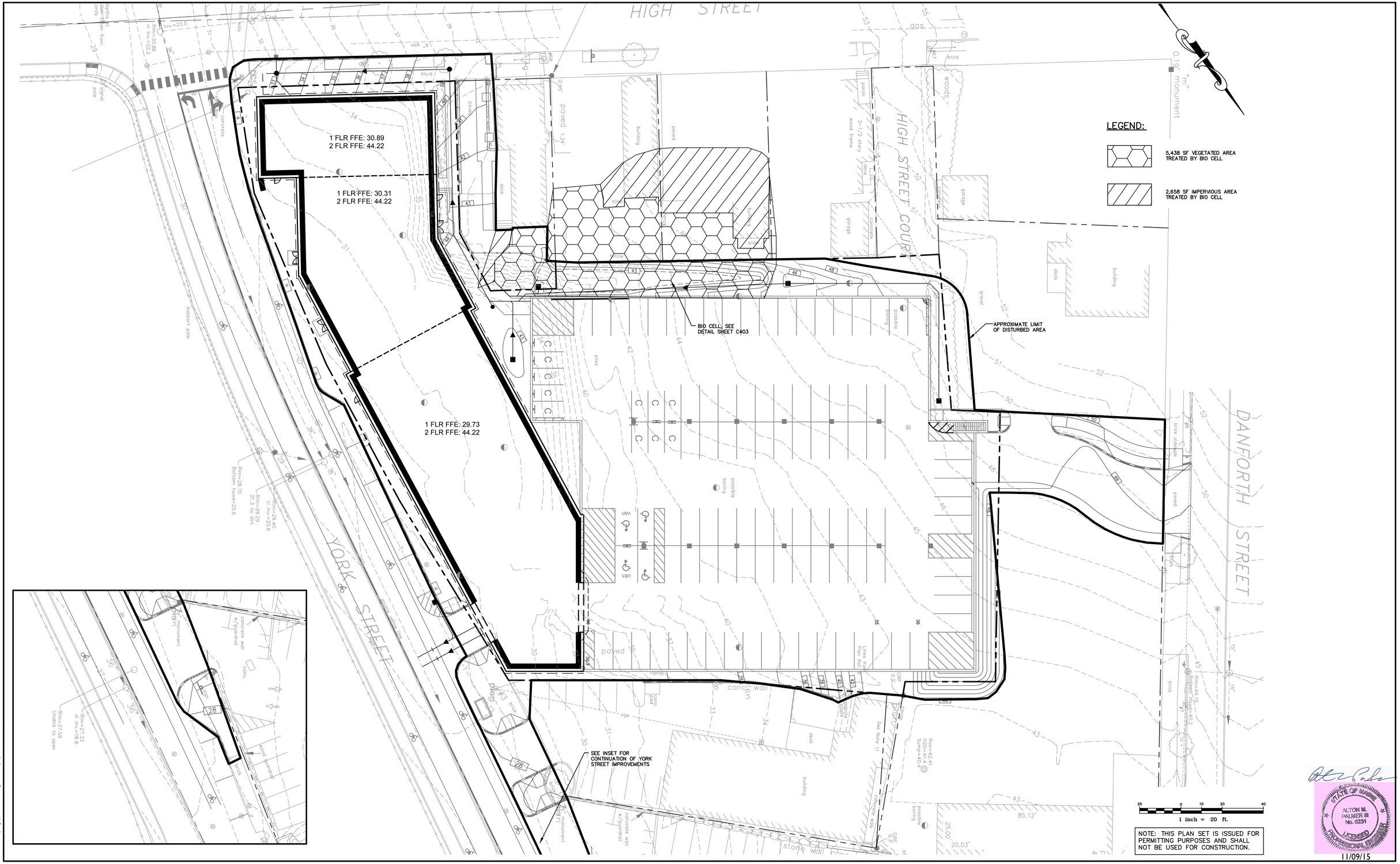
8. Conclusion

The proposed project is a redevelopment of an existing restaurant and parking area and results in 1,236 sf of new impervious area. Treatment of 2,658 sf of impervious area and 5,438 sf of vegetated area is provided by a bioretention cell which satisfies the General Standard. The threshold areas for the Flooding Standard have not been reached by this project therefore the slight increase in impervious area along with the attenuation of runoff within the bioretention cell results in an insignificant impact to downstream areas. The Basic Standard has been met by the Erosion and Sedimentation Control Report submitted to the City.

Attachments

Attachment A - Surface Cover and Water Quality Maps

ATTACHMENT A
Surface Cover and Water Quality Maps



STATE OF MAINE
ALTON M. PALMER III
No. 6231
LICENSED
PROFESSIONAL ENGINEER

11/09/15

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Rev.	Date	Revision
1	11/03/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

Design: JWA	Draft: CG	Date: JUNE 2015
Checked: AMP	Scale: 1"=20'	Job No.: 3018
File Name: 3018-WQ.dwg		

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Drawing Name:	Water Quality Map
Project:	York Street – Mixed Use Development Portland, Maine
Client:	York Street, LLC 36 Danforth Street, Portland, ME 04101

Drawing No.
WQ

HIGH STREET

YORK STREET

HIGH STREET COURT

DANFORTH STREET

APPROXIMATE LIMIT OF DISTURBED AREA

LEGEND

- ROOF/WALKWAY
- IMPERVIOUS PARKING/DRIVES
- VEGETATED

20 0 10 20 40

1 inch = 20 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
ALTON M. PALMER III
No. 6231
LICENSED
PROFESSIONAL ENGINEER

11/03/15

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Rev.	Date	Revision
1	11/03/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

Design: JWA	Draft: CG	Date: JUNE 2015
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File Name: 3018–WS–PRE.dwg

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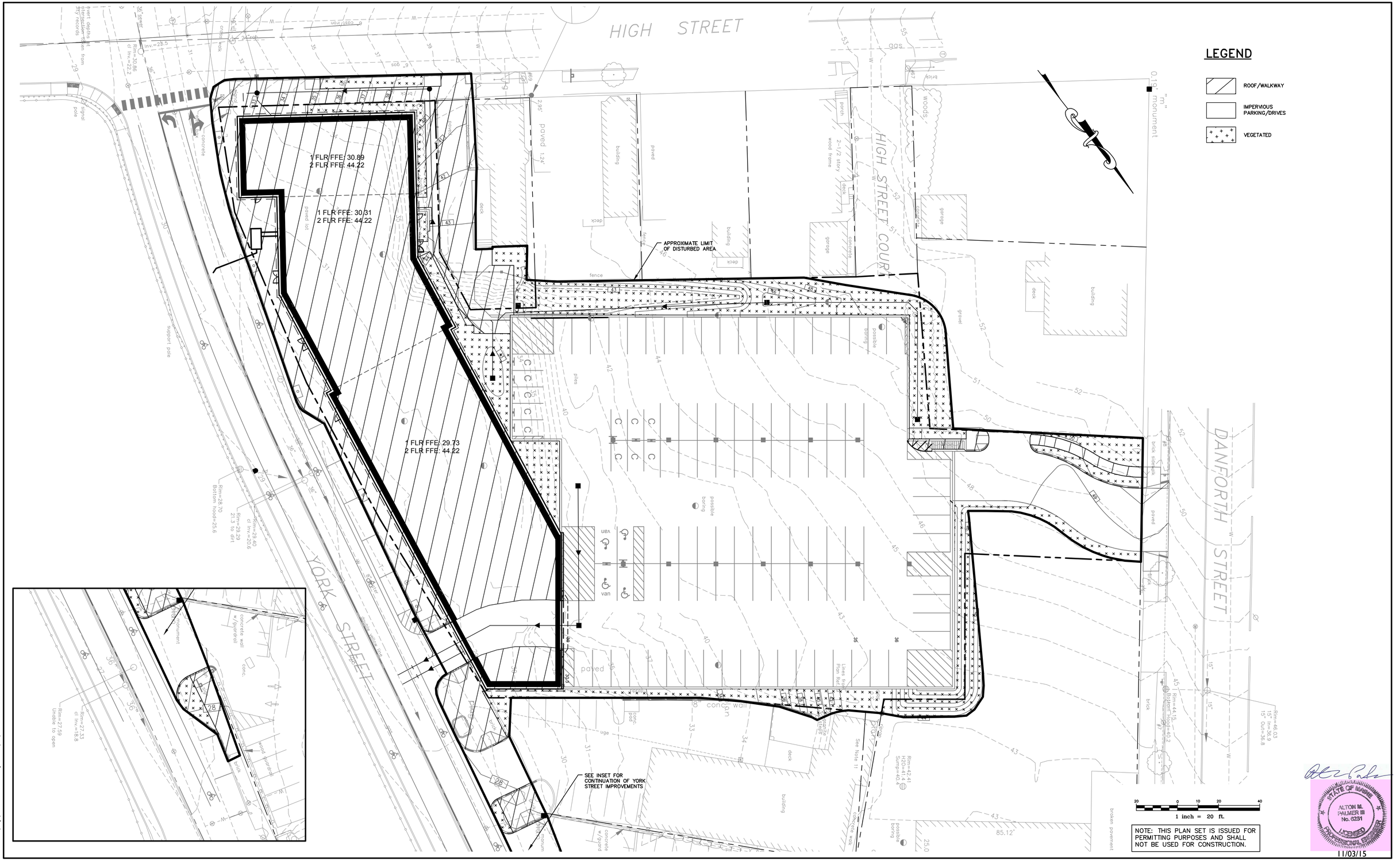
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Drawing Name: **Pre Development Cover Type Map**

Project: **York Street – Mixed Use Development**
Portland, Maine

Client: **York Street, LLC**
36 Danforth Street, Portland, ME 04101

Drawing No. *W1*



NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

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No. 5231
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11/03/15

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Rev.	Date	Revision
1	11/03/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

Design: JWA	Draft: CG	Date: JUNE 2015
Checked: AMP	Scale: 1"=20'	Job No.: 3018

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Drawing Name: **Post Development Cover Type Map**

Project: **York Street – Mixed Use Development**
Portland, Maine

Client: **York Street, LLC**
36 Danforth Street, Portland, ME 04101

Drawing No. **W2**

EROSION AND SEDIMENTATION CONTROL
BASIC STANDARDS

11-3-15



1.1 Overview

This Exhibit demonstrates the developer has made adequate provision for controlling erosion and sedimentation.

1.2 Introduction

Gorrill Palmer has been retained by 101 York Street, LLC to prepare an Erosion and Sedimentation Control Report for a proposed five story multi-use building and two level parking structure at the corner of York Street and High Street in Portland, Maine. The redevelopment of the site is anticipated to include a 17,505 square foot footprint five story building with a total floor area of 97,753 square feet and 213 space parking garage. Figure 1 is a map showing the project location. Gorrill Palmer has prepared an Erosion and Sedimentation Control Plan for the proposed development. This narrative contains the general erosion and sedimentation control measures, which are appropriate for the construction of the project.

1.3 Narrative

1.3.1 Existing Conditions and Soil Types

The site is approximately 66,804 square feet (1.534 acres) in size and is currently developed with a restaurant and parking areas. The disturbed area is approximately 80,670 square feet (1.85 acres) which includes disturbance on adjacent lots. Abutting land uses include:

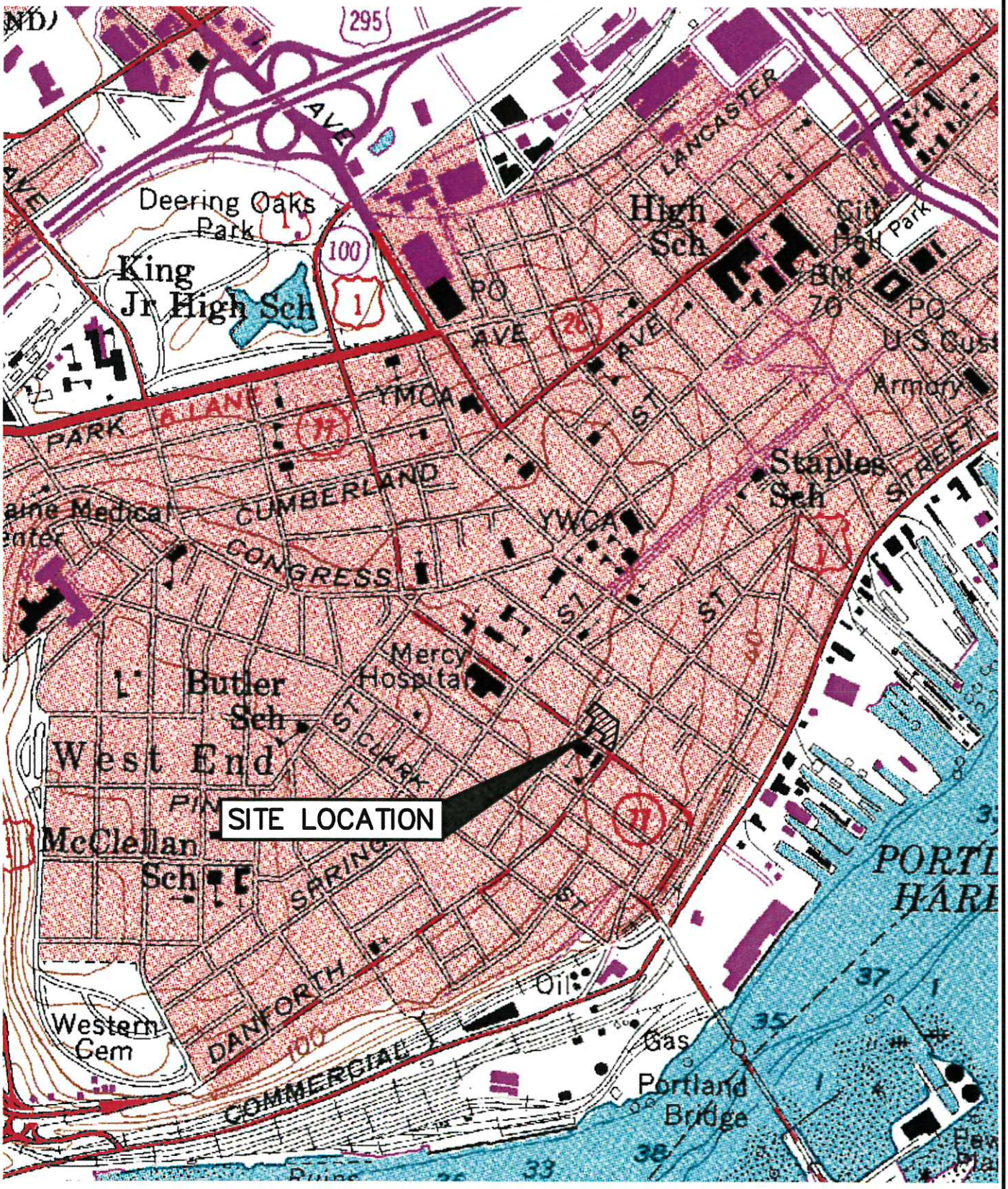
- North – Commercial
- East - Commercial
- South - Commercial
- West — Residential

Topography in the area of the proposed construction varies from relatively flat slops of approximately 6% to steep slopes of 35%. The existing site slopes generally towards York Street.

The Medium Intensity Soil Survey for Cumberland County as prepared by the Natural Resources Conservation Service was utilized in identifying the on-site soils. The soil report for this vicinity follows this page. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. The higher values are indicative of the more erodible soils. The following table lists the soils found on site and their K values:

K VALUE		
Type	Subsurface	Substratum
Hinckley gravelly sandy loan, 3 to 8 percent slopes	0.17	0.17

Based on the review of the K Values, the on-site soils have low susceptibility to erosion.



U.S.G.S. Location Map

York Street Condominiums - Portland, Maine

Portland West, Maine-7.5 Minute Series (Topographic)

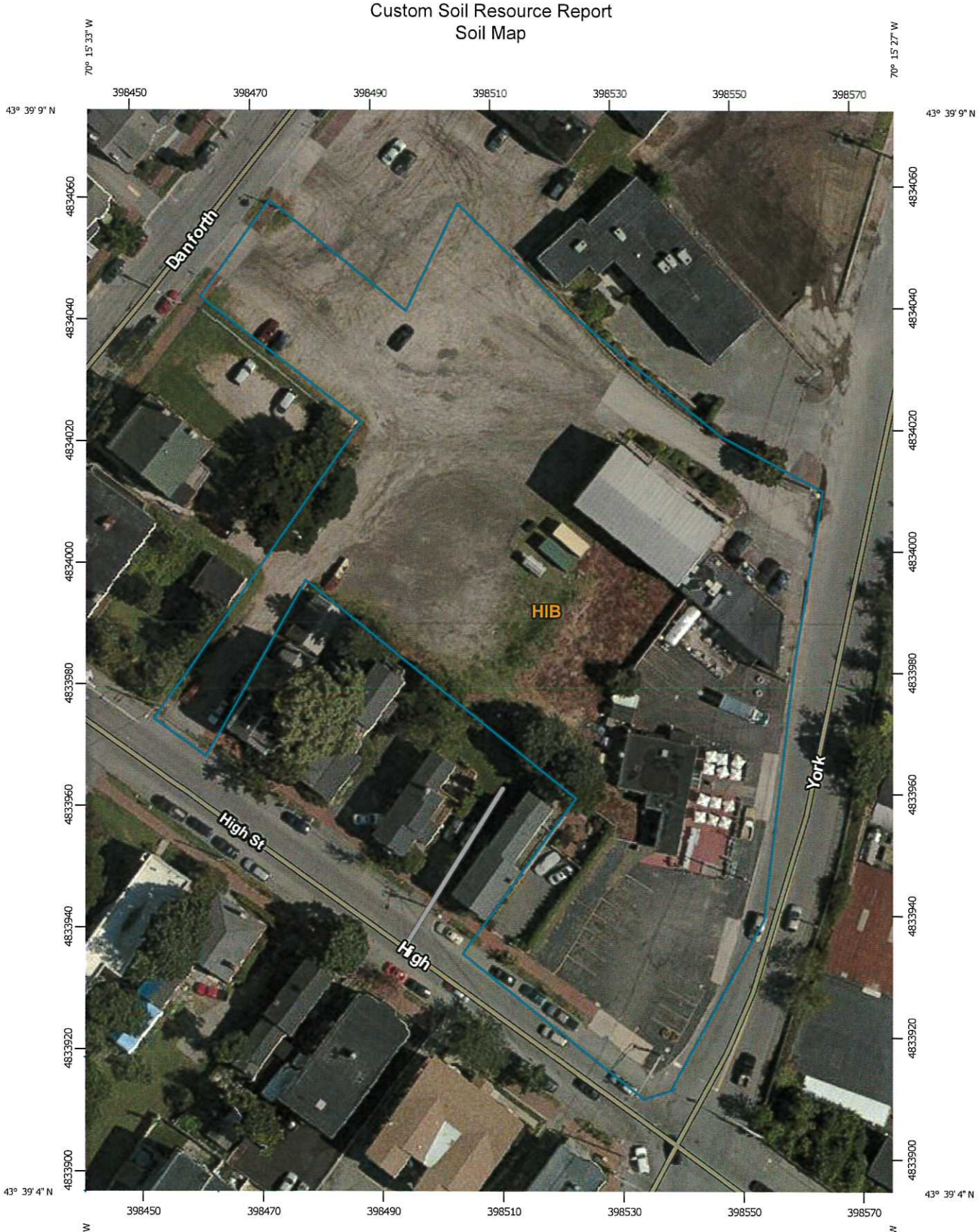
Design: CEH	Date: AUG 2015
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Figure
1

Custom Soil Resource Report
Soil Map



Map Scale: 1:866 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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 9, Sep 13, 2014

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.

Map Unit Legend

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
HIB	Hinckley gravelly sandy loam, 3 to 8 percent slopes	1.9	100.0%
Totals for Area of Interest		**1.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

1.3.2 Existing Erosion Problems

Gorrill Palmer is not aware of any existing erosion problems onsite.

1.3.3 Critical Areas

The construction will take place within the existing development footprint, and is not anticipated to impact any critical areas.

1.3.4 Protected Natural Resources

The site has been previously developed and does not contain wetlands. Based upon the FEMA maps, the site is not located within a Zone A 100-year floodplain.

1.3.5 Erosion Control Measures and Site Stabilization

The primary emphasis of the erosion/sedimentation control plan, which will be implemented for this project, is as follows:

- Development of a careful construction sequence.
- Rapid revegetation of denuded areas to minimize the period of soil exposure.
- Rapid stabilization of drainage paths to avoid rill and gully erosion.
- The use of on-site measures to capture sediment (hay bales/ stone check dams/silt fence, etc.)

The following temporary and permanent erosion and sediment control devices will be implemented as part of the site development. These devices shall be installed as indicated on the plans or as described within this report. For further reference, see the latest edition of the Maine Erosion and Sediment Control BMPS.

A. Dewatering

Water from construction trench dewatering shall pass first through a filter bag or secondary containment structure (e.g. hay bale lined pool) prior to discharge. The discharge site shall be selected to avoid flooding, icing, and sediment discharges to a protected resource. In no case shall the filter bag or containment structure be located within 50 feet of a protected natural resource.

B. Inspection and Monitoring

Maintenance measures shall be applied as needed during the entire construction season. After each rainfall, snow storm or period of thawing and runoff, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuous function. Following the temporary and/or final seeding and mulching, the contractor shall in the spring inspect and repair any damages and/or unestablished spots. Established vegetative cover means a minimum of 90% of areas vegetated with vigorous growth.

C. Temporary Erosion Control Measures

The following measures are planned as temporary erosion/sedimentation control measures during construction:

1. Crushed stone-stabilized construction entrance shall be placed at the entrance along York Street.

2. Siltation fence or wood waste compost berms shall be installed downstream of any disturbed areas to trap runoff- borne sediments until grass areas are revegetated. The silt fence and/or wood waste compost berms shall be installed per the details provided in this package and inspected at least once a week and before and immediately after a storm event of 0.5 inches or greater, and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence or berm line. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam. Wood waste compost berms are not to be used adjacent to wetland areas that are not to be disturbed.

3. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and October 15th on slopes of less then 15 percent shall be anchored by applying water; mulch placed on slopes of equal to or steeper than 15 percent shall be covered by a fabric netting and anchored with staples in accordance with manufacturer's recommendation. Fabric netting and staples shall be used on disturbed areas within 50' of lakes, streams, and wetlands regardless of the upstream slope. Mulch placed between October 15th and April 15th on slopes equal to or steeper than 8 percent shall be covered with a fabric netting and anchored with staples in accordance with the manufacturer's recommendations. Slopes steeper than 3:1 and equal to or flatter than 2:1, which are to be revegetated, shall receive curlex blankets by American Excelsior or equal. Slopes steeper than 2:1 shall receive riprap as noted on the plans. The mulch application rate for both temporary and permanent seeding is 75 lbs per 1000 sf as identified in Attachment A of this section. Mulch shall not be placed over snow.

4. Temporary stockpiles of stumps, grubbings, or common excavation will be protected as follows:

a) Temporary stockpiles shall not be located within 50 feet of any wetlands which will not be disturbed and shall be located away from drainage swales.

b) Stockpiles shall be stabilized within 7 days by either temporarily seeding the stockpile by a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch, such as hay, straw, or erosion control mix.

c) Stockpiles shall be surrounded by sedimentation barrier at the time of formation.

5. All denuded areas that are within 50 feet of an undisturbed wetland, which have been rough graded and are not located within a building pad, parking area, or access drive subbase area, shall receive mulch or erosion control mesh fabric within 48 hours of initial

disturbance of soil. All areas within 100 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. In other areas, the time period may be extended to 7 days.

6. For work, which is conducted between October 15th and April 15th of any calendar year, all denuded areas, shall be covered with hay mulch or erosion control mix, applied at twice the normal application rate and anchored with a fabric netting. The time period for applying mulch shall be limited to 2 days for all areas.

7. York Street, High Street, and Danforth Street shall be swept to control mud and dust as necessary.

8. During grubbing operations stone check dams shall be installed at any evident concentrated flow discharge points and as directed on the Erosion Control Plans.

9. Silt fencing with a minimum stake spacing of 6 feet shall be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The bottom of the fence shall be anchored.

10. Wood waste compost/bark berms may be used in lieu of siltation fencing. Berms shall be removed and spread in a layer not to exceed 3" thick once upstream areas are completed and a 90% catch of vegetation is attained.

11. Water and/or calcium chloride shall be furnished and applied in accordance with MDOT specifications – Section 637 – Dust Control.

12. Loam and seed is intended to serve, as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Application rates are provided in Attachment A of this section. Seeding shall not occur over snow.

D. Permanent Erosion Control Measures

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.) will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas as noted in **Temporary Erosion Control Measures** paragraph 3 of this report. All areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window. Native topsoil shall be stockpiled and reused for final restoration when it is of sufficient quality.

1.4 Implementation Schedule

The following construction sequence shall be required to insure the effectiveness of the erosion and sedimentation control measures are optimized:

It is anticipated that construction of the project will commence in late Fall of 2015 and be completed by Fall of 2016.

Note: For all grading activities, the contractor shall exercise extreme caution not to overexpose the site, this shall be accomplished by limiting the disturbed area.

1. Install stabilized construction entrance at the intersection of the access drive and York Street.
2. Install perimeter silt fence and/or wood waste berms prior to commencement of demolition.
3. Perform demolition of existing site elements.
4. Foundation preparation area shall be excavated for installation of the building foundation. Building work will be on going through the remainder of the project.
5. Commence installation of drainage appurtenances.
6. Commence earthwork and grading to subgrade.
7. Commence installation of water and sewer lines.
8. Continue earthwork and grading to subgrade as necessary for construction.
9. Complete installation of underground utilities to within 5' of the buildings.
10. Install light pole foundations and light poles.
11. Complete remaining earthwork operations.
12. Complete installation of catch basins and appurtenances.
13. Install sub-base and base gravel within parking fields, walkways, and all driveways.

14. Install curbing in parking fields, driveways, and along the streets as needed.

15. Install base course paving for access drive and parking area as well as concrete surfaces.

16. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.

17. Install surface course paving for access drive and parking areas. Stripe per plan.

18. Once the site is stabilized and a 90% catch of vegetation has been obtained, remove all temporary erosion control measures.

19. Touch up loam and seed.

Note: All denuded areas not subject to final paving, riprap, or gravel shall be revegetated.

Prior to construction of the project, the contractor shall submit to the owner a schedule for the completion of the work, which will satisfy the following criteria:

1. The above construction sequence should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to reduce the extent of the exposed areas as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as silt fence and construction entrances in place before large areas of land are denuded.

2. The work shall be conducted in sections which shall:

   a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the proceeding 30 days.

   b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event; or temporarily stabilized within 48 hours of initial disturbance of soil for areas within 50 feet of an undisturbed wetland and 7 days for all other areas. Areas within 50 feet of an undisturbed wetland shall be mulched prior to any predicted rain event regardless of the 48 hour window.

   c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.

1.5 Erosion, Sedimentation and Stabilization Control Plan

The Erosion Control information is included in the plan set.

1.6 Details and Specifications

The Erosion Control details and specifications are included in the plan set.

1.7 Winter Stabilization Plan

The winter construction period is from November 1 through April 15. If the construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15 then the site needs to be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mats, riprap or gravel base on a road.

Winter excavation and earthwork shall be completed such that any area left exposed can be controlled by the contractor. Limit the exposed area to those areas in which work is expected to be under taken during the proceeding 15 days and that can be mulched in one day prior to any snow event.

All areas shall be considered to be denuded until the subbase gravel is installed in roadway/parking areas or the areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch rate shall be a minimum of 150 lbs./1,000 s.f. (3 tons/acre) and shall be properly anchored.

The contractor shall install any added measures which may be necessary to control erosion/sedimentation from the site dependent upon the actual site and weather conditions. Continuation of earthwork operations on additional areas shall not begin until the exposed soil surface on the area being worked has been stabilized, in order to minimize areas without erosion control protection.

1. Soil Stockpiles

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or at 150 lbs/1,000 s.f. (3 tons per acre) or with a four-inch layer of woodwaste erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall. Any soil stockpile shall not be placed (even covered with hay or straw) within 50 feet from any natural resources.

2. Natural Resource Protection

Any areas within 50 feet from any natural resources, if not stabilized with a minimum of 75% mature vegetation catch, shall be mulched by December 1 and anchored with plastic netting or protected with erosion control mats. During winter construction, a double line of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area. Projects crossing the natural resource shall be protected a minimum distance of 50 feet on either side from the resource. Existing projects not stabilized by December 1 shall be protected with the second line of sediment barrier to ensure functionality during the spring thaw and rains.

3. Sediment Barriers

During frozen conditions, sediment barriers shall consist of woodwaste filter berms as frozen soil prevents the proper installation of hay bales and sediment silt fences.

4. Mulching

An area shall be considered denuded until areas of future loam and seed have been loamed, seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized

with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched with straw or hay at a rate of 150 lb. per 1,000 square feet (3 tons/acre) and adequately anchored that ground surface is not visible though the mulch.

Between the dates of November 1 and April 15, all mulch shall be anchored by peg line, mulch netting, asphalt emulsion chemical, or wood cellulose fiber. When ground surface is not visible through the mulch then cover is sufficient. After November 1st, mulch and anchoring of all bare soil shall occur at the end of each final grading workday.

5. Mulching on Slopes and Ditches

Slopes shall not be left exposed for any extended time of work suspension unless fully mulched and anchored with peg and netting or with erosion control blankets. Mulching shall be applied at a rate of 230 lbs/1,000 s.f. on all slopes greater than 8%.

Mulch netting shall be used to anchor mulch in all drainage ways with a slope greater than 3% for slopes exposed to direct winds and for all other slopes greater that 8%. Erosion control blankets shall be used in lieu of mulch in all drainage ways with slopes greater than 8%. Erosion control mix can be used to substitute erosion control blankets on all slopes except ditches.

6. Seeding

Between the dates of October 15 and April 1st, loam or seed will not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. Dormant seeding may be selected to be placed prior to the placement of mulch and fabric netting anchored with staples. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs/1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

Standards for Timely Stabilization of Construction Sites During Winter

1. Standard for the timely stabilization of ditches and channels -- The applicant shall construct and stabilize all stone-lined ditches and channels on the site by November 15. The applicant shall construct and stabilize all grass-lined ditches and channels on the site by September 1.

2. Standard for the timely stabilization of disturbed slopes -- The applicant shall construct and stabilize stone-covered slopes by November 15. The applicant shall seed and mulch all slopes to be vegetated by September 1. The department shall consider any area having a grade greater than 15% to be a slope.

3. Standard for the timely stabilization of disturbed soils -- By September 15 the applicant shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the applicant fails to stabilize these soils by this date, then the applicant shall take one of the following actions to stabilize the soil for late fall and winter.

1.8 Maintenance of facilities

The stormwater facilities will be maintained by the Applicant, 101 York Street, LLC or their assigned heirs. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction as required by the Erosion Control Report. Long-term operation/maintenance recommended for the stormwater facilities is presented below.

The responsible party may contract with such professionals, as may be necessary in order to comply with this provision and may rely on the advice of such professionals in carrying out its duty hereunder, provided, that the following operation and maintenance procedures are hereby established as a minimum for compliance with this section. A maintenance log of the inspections shall be kept by the responsible party.

Inspection and Maintenance Frequency and Corrective Measures:
The following areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

Catch Basins:
Inspect catch basins 2 times per year (preferably in Spring and Fall) to ensure that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection. Hydrocarbon Socks installed within catch basins shall be properly disposed of by an approved contractor within 14 days after the first 1" rainfall event after final pavement. Hydrocarbon Socks shall be maintained within all catch basins during the first year of operation. All socks shall be removed and disposed of one year after the initial replacement. New Hydrocarbon Socks shall be installed within areas that receive new pavement in the future

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

Roadways and Parking Surfaces: Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Repair potholes and other roadway obstructions and hazards. Plowing and sanding of paved areas shall be performed as necessary to maintain vehicular traffic safety.

Soil Filter – Bio-Filtration:
Inspect all upstream pre-treatment measures 2 times per year (preferably in Spring and Fall) for sediment and floatables accumulation. Remove and dispose of any sediments or debris.

Surface (Underdrain Pond, Swale or Bio-Filter):

The soil filter will be inspected within the first three months after construction; thereafter the filter will be inspected 2 times per year (preferably in Spring and Fall) to ensure that the filter is draining within 24 to 48 hours of a rain event equivalent to 1" or more. Adjustments will be made to the outlet valve to ensure that the Bioretention Cell drains within 24 to 48 hours. Failure to drain in 72 hours will require part or all of the soil filter media to be removed and replaced with new material meeting the soil filter gradation. The facilities will be inspected after major storms and any identified deficiencies will be corrected. Harvesting and weeding of excessive growth shall be performed as needed. Inspect for unwanted or invasive plants and remove as necessary.

Housekeeping

The following procedures are hereby established as a minimum for compliance with this section. For further information on the procedures listed below, refer to MDEP Chapter 500 rules – Appendix C.

Spill Prevention:
Appropriate spill prevention, containment, and response planning/implementation shall be used to prevent pollutants from being discharged from materials on site.

Groundwater Protection:
During construction, hazardous materials with the potential to contaminate groundwater shall not be stored or handled in areas of the site which drain to an infiltration area.

Fugitive Sediment and Dust:
Appropriate measures shall be taken to ensure that activities do not result in noticeable erosion of the soils and water and/or calcium chloride shall be used to ensure that activities do not result in fugitive dust emissions during or after construction.

Debris and Other Materials:
Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

Trench or Foundation De-watering:
Water collected through the process of trenching and/or de-watering must be removed from the ponded area, and must be spread through natural wooded buffers or other areas that are specifically designed to collect the maximum amount of sediment possible.

Non-stormwater Discharges:
Identify and prevent contamination by non-stormwater discharges.

Conclusion

The Applicant has provided temporary and permanent erosion control measures as well as specifying a sequence of construction as measures to minimize erosion and sedimentation.

Attachments

Attachment A - Seeding Plan

Attachment B - Inspection Report

ATTACHMENT A
Seeding Plan

SEEDING PLAN

Project: York Street Mixed Use Development

Site Location: Portland, ME

☐ Permanent Seeding ☒ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 13.8 pounds of 10-10-10 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   50% Winter Rye

   50% Annual Rye

6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	13.8	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended; however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

SEEDING PLAN

Project: York Street Mixed Use Development

Site Location: Portland, ME

☒ Permanent Seeding ☐ Temporary Seeding

1. Instruction on preparation of soil: Prepare a good seed bed for planting method used.
2. Apply lime as follows: _____# / acres, OR 138 # /M Sq. Ft.
3. Fertilize with _____ pounds of _____ N-P-K/ac. OR 18.4 pounds of 10-20-20 N-P-K/M Sq. Ft.
4. Method of applying lime and fertilizer: Spread and work into the soil before seeding.
5. Seed with the following mixture:

   40% Creeping Red Fescue

   30% Charger II Perennial Ryegrass

   20% KenBlue Kentucky Bluegrass

   10% Tiffany Chewings Fescue
6. Mulching instructions: Apply at the rate of _____per acre, OR 75 pounds per M. Sq. Ft.

	Amount	Unit # Tons. Etc.
7. TOTAL LIME	138	#/1000 sq. ft.
8. TOTAL FERTILIZER	18.4	#/1000 sq. ft.
9. TOTAL SEED	1.03	#/1000 sq. ft.
10. TOTAL MULCH	75	#/1000 sq. ft.
11. TOTAL other materials, seeds, etc.		
12. REMARKS		

Spring seeding is recommended, however, late summer (prior to September 1) seeding can be made. Permanent seeding should be made prior to August 5 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

ATTACHMENT B
Inspection Report

STORMWATER POLLUTION PREVENTION PLAN

INSPECTION REPORT

PROJECT INFORMATION

Project Name: York Street Mixed Use Development

Address: 101 York Street
Portland, Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Inspector Name: _____

Firm: _____

Title: _____

Qualifications: _____

INSPECTION SUMMARY

Date of Inspection: _____

Major Observations: _____

_____

_____

_____

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

_____

_____

_____

_____

_____

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

_____

_____

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN
(MUST BE IMPLEMENTED WITHIN 7 DAYS OF INSPECTION):

_____

_____

_____

_____

CERTIFICATION STATEMENT:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____
Signature

_____
Typed Name

_____
Title

_____
Date

6. Consistency with City Master Plans

The project is located in the B-3 Downtown Business Zone, the Downtown Entertainment Overlay Zone, and a small portion of site improvements is located in the Historic District.

The project developers believe that the project is consistent with the goals of the City and promotes the following purpose of the B-3 zone as follows:

- Maintain and enhance the role of the downtown as the business and commercial center of the region;
  The proposed project will construct 17,505 sf. of flexible commercial space at the ground level of York Street and will construct 211 parking spaces to support the region.

- Enhance and promote the orderly expansion of retail and service businesses downtown, satisfying the related needs of the city's resident, working and visitor populations;
  The proposed project will construct 17,505 sf. of flexible commercial space at the ground level of York Street and will construct 211 parking spaces to support the region.

- Encourage increased housing opportunity downtown for a diverse residential population;
  The proposed project will construct 63 residential condominiums on the upper four floors on the mixed-use building.

- Enhance the pedestrian environment through the encouragement of intensive mixed-use activities, through the enhancement and maintenance of public and private open space, and through the enlivenment and increased attractiveness of the street environment;
  As previously mentioned, the proposed project is a mixed-use building. The proposal is for flexible commercial space at the street level ground floor and 63 residential condominiums on the upper four floors. Public and private improvements will significantly enhance the streetscape.

- Encourage excellence in urban design;
  The architectural design is evocative of the historic look and scale of buildings in the area, while bringing the best elements of contemporary design. Brick, granite, glass, and high-quality metals are arranged to create visual interest and employs a variation in materials, window types & sizes, and architectural details.

- Preserve and capitalize on the unique character and historic fabric of the downtown through the encouragement of reuse of significant existing structures;
  There are not significant existing structures to be preserve or reuse.

- Reinforce the role of the downtown as a meeting place for community residents and visitors alike from all walks of life and all socio-economic groups;
  The proposed project will construct shared patio space for 63 residential condominiums and the adjacent two-unit residence at 27 High Street.

- Provide adequate parking and transportation facilities which promote accessibility, enhance and encourage development opportunity, and enhance and protect the pedestrian environment;
  The proposed project will provide shared parking, shared driveways, reduce curb cuts, accessible parking and brick sidewalks.

- Provide for the relocation of residents who are displaced by development.
  The proposed project will construct 63 residential condominiums.

Pedestrian-Oriented

The project's redevelopment along York Street and at the intersection with High Street will significantly enhance the streetscape and promote pedestrian-oriented travel along the street frontage. Enhancements include building exterior, brick sidewalks, granite curbing, curb ramps, architectural lighting, granite sit walls, street trees and landscaped planters. The street-level flexible commercial space will be pedestrian friendly by providing floor to ceiling store front windows for create visual interest and by providing the individual tenants the ability for separate entrances from the street. These design elements meet the intent of the design guidelines and will create an enhanced and enjoyable pedestrian environment.

Contextual Architecture

The land bordered by York Street, High Street, and Danforth Street in Portland, Maine sits between the Old Port District and the West End. In the great fire of July 4, 1866, much of the Old Port was burned and the fire stretched down to the corner of York and High Streets and was halted before reaching the West End. The rebuilding of the city after the fire resulted in the construction of many brick buildings in the Old Port area. The York Street Development is a "bridge" between these two areas of the city.

The York Street Development is an in-between condition and thus creates a "bridge" between the commercial brick buildings of the Old Port and the wood residential buildings of the West End. While the functions of the building are divided vertically, commercial space at street level and residential space on the upper levels, the architecture is divided by the Old Port and the West End.

The exterior facades of the building toward the Old Port are delineated in masonry; brick and granite. These facades are detailed in a simple fashion similar to the brick buildings that exist in the Old Port along the piers.

The exterior facades at the corner of York and High Streets are delineated with residentially scaled materials and colors similar to the buildings of the West End. These facades are details in a more ornate fashion with historically proportioned trim, storefront details and cornice.

7. Availability of Off-Site Facilities

The project is located within the city block of York Street, High Street, Danforth Street and Maple Street in a fully developed area of the City. There is significant utility infrastructure, including water, sewer, natural gas, electrical power, and telecommunications within close proximity to the project.

An Existing Conditions Plan is included in the site plan set of this application which depicts the location of the infrastructure around and within the site.

Water

The project will construct a new service off from an 8-inch existing water main in York Street. The Portland Water District has provided a letter indicating the ability to serve the project.

Natural Gas

Natural gas service will be provided by Unitil from an existing main in York Street. Unitil has provided a letter indicating the ability to serve the project.

Storm Drainage

The proposed project will redevelop existing impervious surfaces (including gravel areas). Thus, the project is only required to meet the "basic" requirements pursuant to Portland's Stormwater Standards within the Technical Manual. Stormwater runoff will be collected onsite via drains and conveyed to the newly installed 48-inch municipal storm drain within High Street. The new municipal storm drain was recently installed as a stormwater and sanitary separation project and discharges to the ocean. Stormwater planters will be constructed to provide treatment for a portion of York Street to offset the small increase in impervious area.

The stormwater management report by Gorrill-Palmer is included in this application and addresses the design and analysis of the proposed storm drainage system in detail.

Sanitary Sewer

One 8-inch sewer connection will be made for the building's sanitary discharge. In addition, a sewer connection will be made for drainage. This connection will support the drains for the lower level covered parking within the garage and the underdrains for the stormwater planters. Please note that oil and water separating catch basins will be utilized for the lower level to collect any runoff associated with car "drip" within the garage.

It should be noted that the first floor is flexible commercial space with the potential for a restaurant. Should it become certain that a restaurant will occupy tenant spaces, an internal in-kitchen grease trap will be installed to intercept flow from the kitchen drains.

A Wastewater Capacity Application has been completed and is included as part of the submission material.

Electrical Power

Relocation of Overhead Power Lines along York Street - Central Maine Power (CMP) has existing overhead 3-phase power along the north side of York Street, the south side of Danforth Street, and single-phase power along the east side of High Street. Given the close proximity of the proposed building to York Street, as required by Portland's zoning ordinance, the proposal is to relocate the overhead power along York Street to the south side of the street. Consequently, the relocation will resolve conflicts with CMP's clearance requirements to the power lines.

New Power Services - The existing over-head single-phase power down High Court Street will be removed. New underground electric services will be installed underground from an existing pole on Danforth Street. With the execution of an easement with 78 Danforth Street, the new services and transformer will be installed along the common property line. CMP has provided a letter indicating the ability to serve the project.

Telecommunications

Fairpoint and Time Warner Cable telecommunications are located overhead on the same poles as the power. The proposed services will be installed with the electric off from Danforth Street. Both Fairpoint and have provided letters indicating the ability to serve the project.

Portland Water District
FROM SEBAGO LAKE TO CASCO BAY

July 2, 2014

WBRC Architects-Engineers
30 Danforth Street, Suite 306
Portland, ME 04101

Attn: Chris Parent, EI
Re: Danforth/York Parking Garage; 101 York Street, Portland
Ability to Serve with PWD Water

Dear Mr. Parent:

The Portland Water District has received your request for an Ability to Serve determination for the noted site submitted on May 23, 2014. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter.

Please note that this letter does not constitute approval of this project from the District. Please review this letter for any special conditions specified by the District and to determine the appropriate next steps to take to move your project through the submittal and approval process.

Existing Site Service

According to District records, the project site does currently have existing water service. There are numerous existing water services at this site connected to the water mains in York, High and Danforth Streets. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of these services.

Water System Characteristics

According to District records, there are a combination of 6-inch and 8-inch diameter water mains within York, High and Danforth Streets, and public fire hydrants located as shown on the attached infrastructure map.

The current data from the nearest hydrant with flow test information is as follows:

Hydrant Location:	Danforth Street at Maple Street
Hydrant Number:	POD-HYD00133
Last Tested:	3/26/2008
Static Pressure:	91 psi
Residual Pressure:	88 psi
Flow:	1,644 GPM

Public Fire Protection

You have not indicated whether this project will include the installation of new public hydrants to be accepted into the District water system. The decision to require new hydrants and to

225 DOUGLASS STREET P.O. BOX 3553 PORTLAND, MAINE 04104-3553
PHONE: 207.774.5961 FAX: 207.523.5440 WEB: WWW.PWD.ORG

determine their locations is solely that of the local fire department. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The ability to serve request indicated that the new development is estimated to demand 5,520 gallons per day. 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 the MEANS Division to request a hydrant flow test and we will work with you to get more complete data.

Conditions of Service

The District can confirm that the existing water system and the sewer treatment and interception systems have the capacity to serve the proposed parking garage and mixed-use four story building. Please contact the City of Portland for specifics related to the City's sewer collection system. The District has found evidence of at least 13 existing water services from York, High and Danforth Streets that enter through the properties frontage. Any existing services that will no longer be used as a result of this development must be terminated at the water main per District standards. Typically service termination would be the responsibility of the developer; however, since the District has plans to replace the water mains in York, High and Danforth Streets. At the time of the new installation any unused services will not be reconnected to the new water main. If the timing of the District's renewal project permits, it may be beneficial to work with the development team to have any new services installed along with the new main installation.

As your project progresses, we advise that you submit any preliminary design plans to MEANS for review of the water service line configuration. We will work with you to ensure that the design meets our current standards. If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Glissen Havu, E.I.
Design Engineer

August 28, 2015

Barry Stowe
Opechee Construction Corporation
11 Corporate Drive
Belmont NH 03220

Re: York Street Apartments, Mixed Use Plan, York Street, Portland, ME

Dear Mr. Stowe:

Thank you for your interest in using natural gas for the above referenced project.

Unitil has natural gas in the vicinity of this project to provide additional gas service. The evaluation to complete the design, costs and determining what the customer contribution may be, if any, can be completed once Unitil receives the completed design and load information. Unitil welcomes the opportunity for further discussions regarding this project.

If you have any further questions or require additional information, please contact me directly at (207) 541-2505 or at fowler@unitil.com.

Sincerely,

Kelly Fowler
Sr. Business Development Representative
Unitil Corporation
(o) 207-541-2505 (f) 207-541-2565

Barry Stowe

From: Pelletier, Mark <mark.pelletier@twcable.com>
Sent: Friday, July 10, 2015 10:45 AM
To: Barry Stowe
Subject: RE: Ability to serve letter for a new JB Brown mixed use building project

Barry,

Hoping this email will do for a "ability to serve" letter?

Time Warner Cable does have existing cable plant in the scope of work area and will be able to provide all our services to the project. A 4 inch conduit with rope will be needed to provide services to the bldg(s). I will need to get asset of Power company plans to see how/route they are going to take to provide pwr.
I'll also need to get involved in a few of the first preconstruction utility meetings etc.

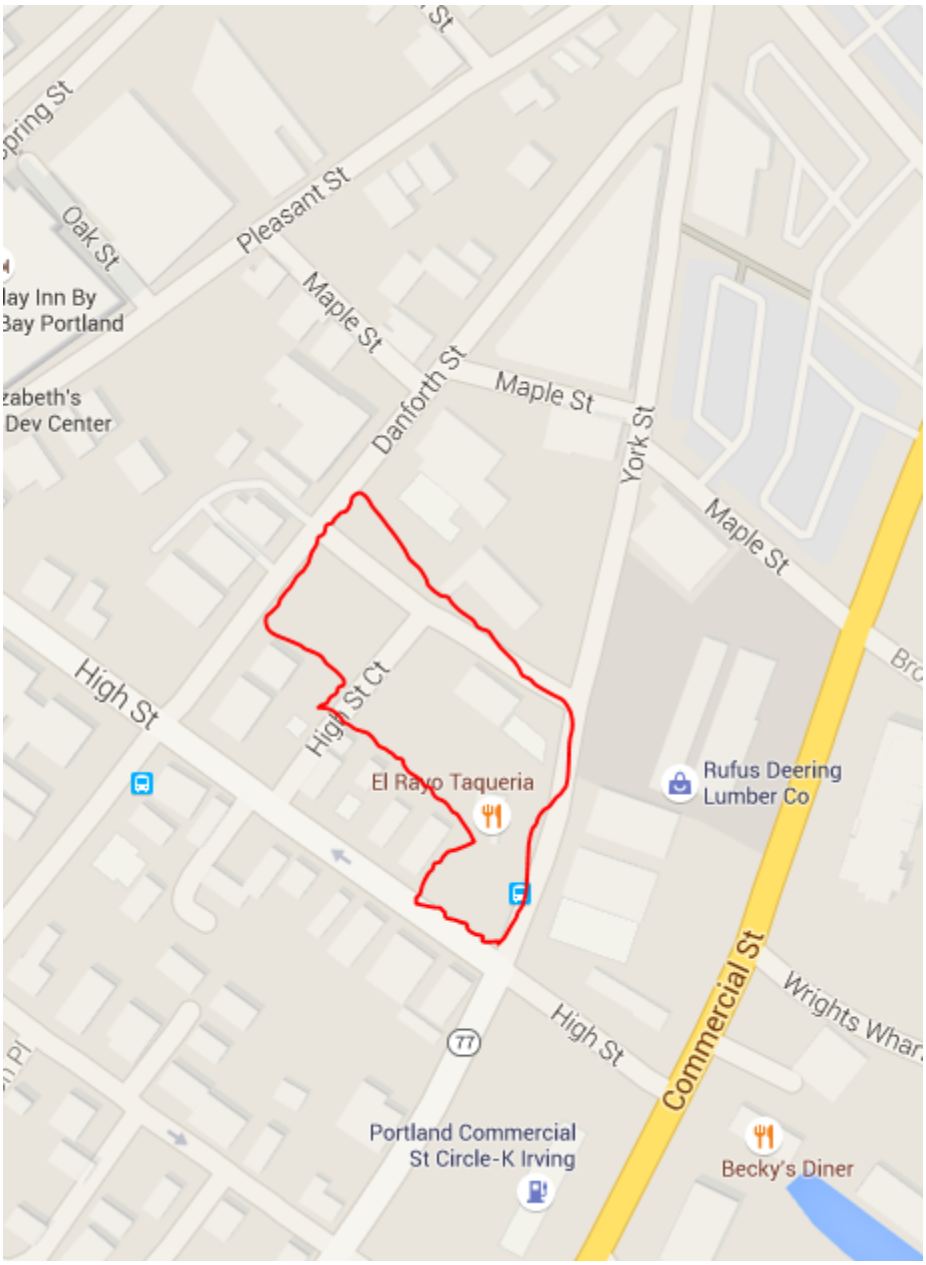
Please keep me in the loop and have a good weekend..

Mark

From: Barry Stowe [mailto:barrys@opechee.com]
Sent: Thursday, July 09, 2015 2:46 PM
To: Pelletier, Mark
Subject: Ability to serve letter for a new JB Brown mixed use building project

Hi Mark,

JB Brown & Sons is proposing to construct a new 5-story mixed use building and parking garage within the city block between York Street, High Street and Danforth Street. The project will provide 63 apartments, 17,000 sf flexible commercial space, and around 200 parking spaces. As part of the site permitting process, we need to provide the City with "ability to serve" letters from the various utility companies. I was hoping you could provide me with that letter. Opechee Construction Corporation is the same design/build general contractor that constructed the Marriott Courtyard on Commercial Street. If you require any information, please contact me.



Thank you,

Barry Stowe

Opechee Construction Corporation
11 Corporate Dr | Belmont | NH 03220
P (603) 527-9090 | F (603) 527-9191

barrys@opechee.com | www.opechee.com

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Fairpoint Communications
Engineering Dept.
5 Davis Farm Rd
Portland, Me. 04103
November 18, 2014

Barry Stowe
Opechee Construction Corporation
11 Corporate Dr
Belmont |NH 03220

To whom it may concern:

Fairpoint Communications does have the ability to service the proposed new 5-story mixed use building and parking garage within the city block between York Street, High Street and Danforth Street. The project will provide 63 apartments, 17,000 sf flexible commercial space, and around 200 parking spaces in Portland, ME 04101 per the Maine Public Utilities Commission Tariff.

Sincerely,
John Caprio
Senior Network Engineer
Fairpoint Communications
jcaprio@fairpoint.com
207-797-1678

Central Maine Power 1-800-750-4000
162 Canco Road, Portland, Maine 04103

July 13, 2015

Opechee Construction Corporation
C/O Mr. Barry Stowe
11 Corporate Drive
Belmont, NH 03220

RE: Three Phase Electric Service, York Street, Portland, Maine

Dear Mr. Stowe,

This letter is to advise you Central Maine Power has sufficient three phase electrical capacity in the area to serve the subject project.

Once the project is accepted by the City of Portland, the owner will need to call our Customer Service Center at 1-800-565-3181 to sign up for a New Account and a Work Request Order so we may provide an actual cost.

I will need to know what size service and voltage the Customer will be requesting.

If you have any questions please feel free to call me at 828-2882.

Sincerely,

Paul DuPerre
Energy Service Specialist

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

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

Date: August 14, 2015

Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail:fjb@portlandmaine.gov

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

Site Address: 85 & 101 York Street

Chart Block Lot Number: 40-C: 3, 4, 5, 9, 18, 21, 22, 25, 33 and High Street Court

Proposed Use: mixed-use commercial tenant space

Previous Use: restaurant, parking, office

Existing Sanitary Flows: 3,880 GPD

Existing Process Flows: n/a GPD

Description and location of City sewer that is to receive the proposed building sewer lateral.
Existing 36" sewer main in York Street

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

(Clearly, indicate the proposed connections, on the submitted plans)

2. Please, Submit Contact Information.

City Planner's Name: Helen Donaldson Phone: 207-874-8723

Owner/Developer Name: 101 York Street, LLC / J.B. Brown & Sons

Owner/Developer Address: 36 Danforth Street, Portland, ME 04101-4502

Phone: 207-774-5908 Fax: 207-774-0898 E-mail: veroneau@jbbrown.com

Engineering Consultant Name: Gorrill-Palmer

Engineering Consultant Address: 15 Shaker Road, Gray, ME 04039

Phone: 207-657-6910 Fax: n/a E-mail: APalmer@gorrillpalmer.com

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

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 17,790 GPD

Peaking Factor/ Peak Times: 6am to 8am

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)*
see attached

(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: The first floor is flexible commercial space and its tenants is undetermined.

Size of External Grease Interceptor:

Retention Time: If a restaurant is proposed, the grease trap will be an in-kitchen device.

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 not applicable

Estimated Industrial Process Wastewater Flows Generated: _____ GPD

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

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

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

Peaking Factor/Peak Process Times: _____

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

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

Notes, Comments or Calculation

See attached calculation my Gorrill-Palmer

GORRILL PALMER	JOB	York Street Mixed Use Development		
	SHEET NO.	1	OF	2
	CALCULATED BY	CEH	DATE	8/6/2015
	CHECKED BY	AMP	DATE	8/7/2015
	SCALE	None		

Task: Compute Existing Design Flow for the York Street space based on Table 4C of the Maine Subsurface Wastewater Disposal Rules for comparison to the Proposed Flow

Assumptions: Facility Information (Office Space, Restaurant Capacity) Provided by Opechee Construction

Table 4C of the Maine Subsurface Wastewater Disposal Rules

Existing Use: 101 York Street - 1,300 sf Eating Place - Assumed 2 Meals per day. Assumed 20 Employees Per Day

85 York Street - 1,300 sf Eating Place - Assumed 2 Meals per Day, 15 Employees Per Day

- 9,000 sf Office Space - Assumed 45 Employees Per Day

Wastewater Flow Per Use:

Office Space- Place of Employment with no showers	12	gpd/employee			
101 York St Eating Place	20	gpd/seat (2 meals)	plus	12	gpd/employee
85 York St Eating Place	20	gpd/seat (2 Meals)	plus	12	gpd/employee

Calculations: See Below

Conclusion: Based on current DHS Methodolgy (Facility Usage) the current Design Flow is **3,880** gallons/day

Existing Design Flow is less than proposed design flow.

Water Use Calculations Based on Facility Usage

Per Table 4C of the Maine Subsurface Wastewater Disposal Rules

85 York St Office Space

Number of Employees	45	(Assumed)	
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	540	gallons/day	
Subtotal Design Flow	**540**	**gallons/day**	

85 York St Eating Place

Number of Seats	56	(Per Opechee)	
Flow Rate	20	gpd/seat	Per Table 4C
Subtotal	1,120	gallons/day	
Number of Employees	15	(Assumed)	
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	180	gallons/day	
Subtotal Design Flow	**1,300**	**gallons/day**	

101 York St Eating Place

Number of Seats	90	(Per Opechee)	
Flow Rate	20	gpd/seat	Per Table 4C
Subtotal	1,800	gallons/day	
Number of Employees	20	(Assumed)	
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	240	gallons/day	
Subtotal Design Flow	**2,040**	**gallons/day**	

Total Design Flow **3,880** **gallons/day**

GORRILL PALMER	JOB	York Street Mixed Use Development		
	SHEET NO.	2	OF	2
	CALCULATED BY	CEH	DATE	8/10/2015
	CHECKED BY	AMP	DATE	8/10/2015
	SCALE	None		

Task: Compute Proposed Design Flow for York Street based on Tables 4A and 4C of the Maine Subsurface Wastewater Disposal Rules for comparison to the Existing Flow

Assumptions: Facility Information (Retail/Restaurant Space, Number of Condominiums) Provided by Opechee Construction

Tables 4A and 4C of the Maine Subsurface Wastewater Disposal Rules

Proposed Use: Condominiums - Four stories. 59 two-bedroom units and 4 three-bedroom units

Eating Place - 7,000 sf- Assumed 175 seats, 30 employees per day

Specialty Retail- 9.555 sf- Assumed 5 spaces at 8 Employees per space/day= 40 employees/day

Wastewater Flow Per Use:

2 Bedrooms or less	180	gpd/dwelling unit			
3 Bedroom	270	gpd/dwelling unit			
Eating Place	30	gpd/seat (3 Meals)	plus	12	gpd/employee
Specialty Retail- Place of Employment with no showers	12	gpd/employee			

Calculations: See Below

Conclusion: Based on current DHS Methodolgy (Facility Usage) the proposed Design Flow is **17,790** gallons/day

Proposed Design Flow is greater than the existing flow

Water Use Calculations Based on Facility Usage

Per Table 4C of the Maine Subsurface Wastewater Disposal Rules

2 Bedroom or less

Number of Condos	59	(Per Opechee)	
Flow Rate	180	gpd/bed	Per Table 4A
Subtotal	10,620	gallons/day	
Subtotal Design Flow	**10,620**	**gallons/day**	

3 Bedroom

Number of Condos	4	(Per Opechee)	
Flow Rate	270	gpd/seat	Per Table 4A
Subtotal	1,080	gallons/day	
Subtotal Design Flow	**1,080**	**gallons/day**	

Eating Place

Number of Seats	175	(Assumed)	
Flow Rate	30	gpd/seat	Per Table 4C
Subtotal	5,250	gallons/day	
Number of Employees	30	(Assumed)	
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	360	gallons/day	
Subtotal Design Flow	**5,610**	**gallons/day**	

Specialty Retail

Number of Employees	40	(Assumed)	
Flow Rate	12	gpd/employee	Per Table 4C
Subtotal	480	gallons/day	
Subtotal Design Flow	**480**	**gallons/day**	

Total Design Flow	**17,790**	**gallons/day**

8. Solid Waste

Residence:

-A solid waste room will be provided within the building adjacent to entrance. Residents will bring their trash to the room individually. A commercial waste management company will be retained to facilitate the trash/recycling operations.

Commercial Space:

-Tenant's will remove their waste individually to offsite containers provided by J.B. Brown. A commercial waste management company will be retained to facilitate the trash/recycling operations for these offsite containers.

9. Code summary per NFPA 1 and Fire Dept. Standards

Fire/Building Codes:

-The building will be designed in accordance with the City Building Code, as well as all applicable local, state, and federal codes/laws. The building will be fully sprinklered in accordance with NFPA 13, and will have fire detection/alarm systems as dictated by NFPA 72 and the underlying codes.

Technical Standard 3.2 - Fire Hydrants:

-There are (7) municipal fire hydrants located within 500 feet radius of the building. Please see the attached GIS map from the Portland Water District

Technical Standard 3.3 - Single and Two Family Residential Development:

- Not applicable

Technical Standard 3.4 - Site Access Standards:

-Fire department access is provided via York Street and High Street for 2 sides of the building. Also, a portion of building will be accessible via an access driveway from Danforth Street.

- All site access provides no less than 9 feet in clearance height.

-All elevators will accommodate an 80 x 24 stretcher.

-The building will display the assigned street numbers

Technical Standard 3.5 - Standards for emergency access lanes and gates:

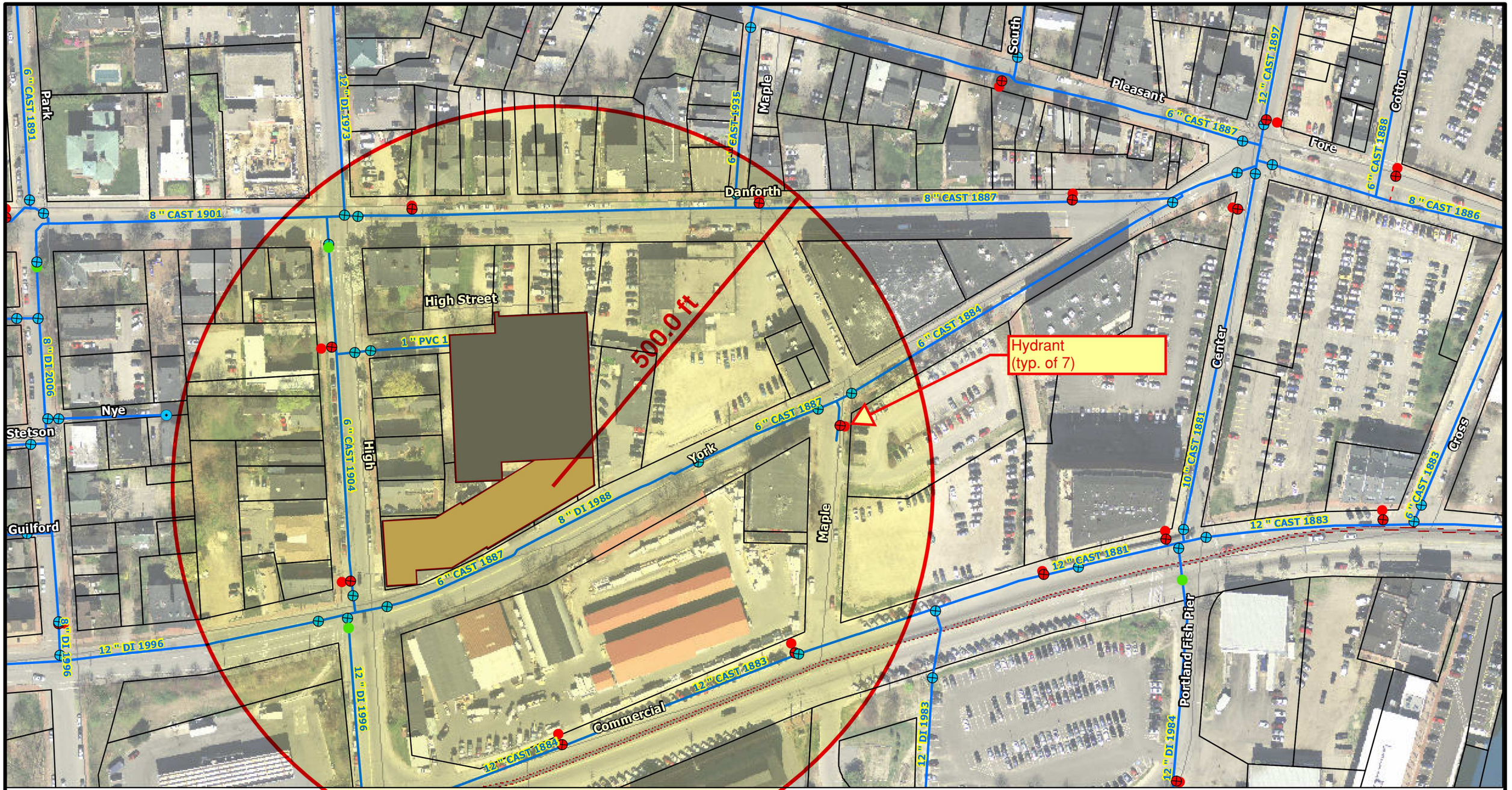
- Not applicable

Technical Standard 3.6 - Subdivision Standards:

- Not applicable

Technical Standards 3.7 through 3.11 - Standards for blasting and regulation of explosives:

- Geotechnical explorations were performed and the subsurface condition does contain bedrock. Based on the findings, large blast operations are anticipated. Accordingly, Opechee Construction Corporation will prepare an application in accordance with the technical standards for a blasting permit all the application information for a blasting permit for information The standards for blasting and regulation of explosives for a large blast operation.



0 60 120 240 360 480 Feet

1 inch = 120 feet

PORTLAND WATER DISTRICT
225 Douglass Street
Portland, ME 04104

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	

York Street Project

Portland

Disclaimer: This map is suitable for preliminary study and analysis and is based on PWD record information. PWD is not liable for any damages whatsoever resulting from inaccurate data or from errors made in the location and marking of its infrastructure.

Drawn By: Morris

Prepared For: Barry Stowe

Scale: As Noted

Date: 07/30/2015

OPECHEE
CONSTRUCTION CORPORATION

October 9, 2015

Vin Veroneau
President/CEO
J. B. Brown & Sons
36 Danforth Street
Portland, ME 04101

Re: York Street Mixed-Use Development – Code Analysis Narrative

Dear Vin,

Pursuant to our conversation below is a code analysis narrative for your use with the City of Portland.

The proposed project is a mixed use development at the corner of York and High Streets. The proposal is a five story building from York Street and four stories at rear (interior block) with approximately 17,250 sq. ft. of commercial space on the first floor and 63 residential units on the upper four floors. The use groups are A-2 or M (to be determined) and R-2 respectively. The proposed project also includes a parking facility with two levels of parking for 211 vehicles; one at/below grade (107 spaces) and one elevated (104 spaces). Access to the lower level parking will be from York Street and access to the elevated deck will be at grade from Danforth Street.

Both structures are constructed as Type IIB. The structures are separated by a two hour firewall (per Table 706.4 for R-2 and S-2 separation) located on the first floor of the parking structure in accordance with IBC 2009 Section 706 and IBC 2009 706.6.1 exception 1 Stepped Buildings. The allowable area for R-2 as set forth by IBC 2009 Table 503 is 16,000 square feet, 4 stories and 55' above grade. Section 504.2 allows the building height and stories to be increased when a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 by 20', but not exceed 60' or 4 stories. These increases are permitted in addition to the building area increase in accordance with Sections 506.2 and 506.3. Section 506.3; "Automatic sprinkler system increase: Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the building area limitation in Table 503 is permitted to be increased by an additional 200 percent (Is = 2)." The result for the R-2 use group of the project is an allowable area of 48,000 square feet per floor, 4 stories and less than 60'. Note that this area increase is not inclusive of any "frontage increase" allowed per Section 506.2. The proposed R-2 use of the structure has a floor area of 20,016 per floor, is 4 stories and 44'-9" above grade plane.

Per NFPA 1, Fire Code, Section 18.2.3.2; Access to Building, subsection 18.2.3.2.2, Fire Department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 ft. from fire department access roads as measured by an approved route around the exterior of the building or facility. Sub-subsection 18.2.3.2.2.1, when buildings are protected throughout with an approved automatic sprinkler system that is installed in accordance with NFPA 13, NFPA 13D, NFPA 13R, the distance in 18.2.3.2.2 shall be permitted to be increased to 450 ft. These sections have no amendments per the Code of Ordinances from the City of Portland as adopted November 7, 2013.

Please let us know if you need further assistance with this matter.

Sincerely,

Keith A Kelley, Architect

11 CORPORATE DRIVE ▪ BELMONT ▪ NH 03220
PHONE (603) 527-9090 ▪ WWW.OPECHEE.COM

10. Consistency With Design Standards

As described in other sections of this application, the project is consistent with the general design standards contained in Section 14-526 of the Land Use Ordinance. In addition, there are specific design standards applicable to the B-3 Downtown Business Zone that are set forth in the City of Portland Design Manual. For convenience and to ensure completeness of this section of the application, the B-3 Zone Design Standards are reproduced below and the applicant's statements regarding consistency follow each section in italics.

(b) B-3 DOWNTOWN BUSINESS ZONE:

(1) STANDARDS.

a. In addition to applicable standards of Section 14-526 of the Land Use Code, development located within the B-3 zone shall also meet the following standards. Adequacy in meeting these standards will be evaluated on the basis of descriptions and illustrations in the Downtown Urban Design Guidelines included as Appendix 1 of this manual. Nothing in this section is intended to discourage creative and responsive design or to mandate similarity or mimicry of design in order to achieve the standards herein:

1. Relationship to the pedestrian environment:

i. General: The exterior design of portions of buildings within the first thirty-five (35) feet of height shall enhance the character, attractiveness, comfort, security, and usability of the street level pedestrian environment. Factors to be considered include the design, placement, character and quality of the following:

1) Storefronts and building facades, including such factors as relationship to adjacent or nearby structures or open space, pedestrian character, materials and detailing, transparency (having a visible transmittance (VT) of .7 or higher) and contemporary design;
The proposed building will have floor to ceiling pedestrian friendly store front windows that will provide visual interest. The windows will meet the visible transmittance requirement.

2) Building entrances, including such factors as compatibility with the building's façade, prominence along the street, access to the street, and accessibility for physically handicapped or for those with special needs;
The commercial space on the first floor will have access to the street. With the utilization of floor to ceiling store front windows, entrance locations will be flexible to the final layout of the tenant space.

3) Blank facades; and
The maximum length of undifferentiated blank wall is only 11 feet 4 inches.

4) Special features, such as selective use of such features as building arcades and skywalks or elevated walkways.
The proposed public sidewalks building façade will include special features such as granite sit walls, planters, and stormwater planters to promote urban design elements. Some of these special features elevate a portion of the walkway above the street curb to maximize the length of building façade with at-grade street access.

b. Pedestrian Activities District (PAD): In addition to subsection 1 of this section, proposed development located within the pedestrian activities district (PAD) overlay zone, as shown on the pedestrian activities district map, a copy of which is on file in the department of planning and urban development, shall be designed and constructed to accommodate pedestrian oriented uses at the street level. In determining such design, the following factors should be considered:
Not applicable. Project is not located in the PAD district.
    1. The exterior design of the street level building facade, including the placement of entrances, potential entrances, and window openings;
    2. The design and placement of impenetrable exterior building features such as columns, piers, bearing walls and retaining walls;
    3. The orientation of proposed street level uses to the street and the accessibility of floor area to the street by virtue of grade elevations and access;
    4. The adequacy of the interior layout of the first twenty (20) feet in depth of the building along specified streets to accommodate viable pedestrian-oriented uses;
    5. The continuity of street level uses as impacted by service entrances to parking structures or lots, drive-through facilities or other interruptions.

c. Pedestrian activities district (PAD) encouragement areas: In addition to subsection 1 of this section, proposed development located within the pedestrian activities district (PAD) encouragement areas, as shown on the pedestrian activities district map, a copy of which is on file in the Planning and Urban Development Department, shall be designed and constructed to be reasonably capable of being converted to accommodate uses permitted in the PAD overlay zone in accordance with the factors set forth in subsection b. of this section.
Not applicable. Project is not located in the PAD district encouragement area.

d. Sidewalk areas and open space: The design of publicly accessible sidewalk areas and open space shall complement the general pattern of the downtown pedestrian environment, conform to special City of Portland streetscape programs described in the Technical Manual, and enhance the attractiveness, comfort, security, and usability of the pedestrian environment. Factors to be considered include the design, placement, character, durability, and quality of the following:
    1. Sidewalk, crosswalk, and street paving materials;
    All the proposed sidewalks and the driveway crosswalk will utilize brick pavers to promote the downtown pedestrian environment. Also, the streets improvements will utilize granite curbing and bituminous concrete.

2. Landscaping, planters, irrigation, and tree guards and grates;
   The project proposes to enhance the streetscape with planters and street trees.

3. Lighting;
   The project proposes new public street lighting along York Street and High Street. The project utilizes the Bayside District Medium Scale Light.

4. Pedestrian amenities such as benches and other seating, trash receptacles, kiosks, bus shelters, artwork, directional and informational signage, fountains, and other special features; and
   The project proposes granite sit benches and stormwater planters as special features.

5. Sidewalk vendors and sidewalk cafes.
   The project proposes a "plaza" area adjacent to the building. Depending on the tenants, this area could be utilized for outdoor seating and vendors.

e. Relationship to existing development:
   General: Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the downtown, surrounding building environment and streetscape, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1). Factors to be considered include the relationship to the following existing patterns:
   The proposed project creates a bridge between the commercial brick buildings of the Old Port and the wood residential buildings of the West End. While the functions of the building are divided vertically; commercial space at level 1 and residential space on the upper levels, the architecture is divided by the Old Port and the West End.

   i. Street walls and building setbacks;
      Please see the build-to setback waiver request above

   ii. Open space;
      The project proposes open space and a common patio area for the proposed residences and the multi family residence at 27 High street

   iii. Building form, scale and massing;
      The proposed project creates a bridge between the commercial brick buildings of the Old Port and the wood residential buildings of the West End.

   iv. Facade proportion and composition;
      The exterior facades of the building toward the Old Port are delineated in masonry; brick and granite. These facades are detailed in a simple fashion similar to the brick buildings that exist in the Old Port along the piers. At the corner of York Street and High Street, the building is utilizes residentially scaled materials and colors

similar to the buildings of the West End. These facades are details in a more ornate fashion with historically proportioned trim, storefront details and cornice.

v. Pedestrian circulation and building entrances;
Pedestrian circulation is provided throughout the proposed site. As it relates to the building entrances, commercial tenant space will have access from York Street and the residential condominiums will have access from High Street.

vi. Parking.
The project will construct a parking garage with 211 spaces. There will be a net increase of 30 spaces in the post-development condition.

2. Standards for increasing setback beyond street build-to line: A proposed development may exceed maximum setbacks as required in section 14-220(c) only where the applicant demonstrates to the Planning Board that the introduction of increased building setbacks at the street level:
The project is requesting relief from section 14-220(c). Please see the waiver request.

i. Provides substantial and viable publicly accessible open space or other amenity at the street level that supports and reinforces pedestrian activity and interest. Such amenities may include without limitation plazas, outdoor eating spaces and cafes, or wider sidewalk circulation areas in locations of substantial pedestrian congestion;
The project will support pedestrian activity by proposing wider sidewalks, planters, granite sit walls, and a small plaza area.

ii. Does not substantially detract from the prevailing street wall character by introducing such additional setback at critical building locations such as prominent form-defining corners, or create a sense of discontinuity in particularly consistent or continuous settings;
The proposal does include a building projection to define the York Street & High Street intersection corner.

iii. Does not detract from existing publicly accessible open space by creating an excessive amount of open space in one (1) area or by diminishing the viability or liveliness of that existing open space; and
The proposed building setbacks are not excessive and the building will have an "on-street" presence. Please see the waiver request.

iv. The area of setback is of high quality and character of design and of acceptable orientation to solar access and wind impacts as to be attractive to pedestrian activity.
The area of the setback is complementary of Portland's downtown in utilizing materials such as brick and granite.

v. Roof top appurtenances: All mechanical equipment, ventilating and air conditioning and other building systems, elevators, stairways, radio or television masts or equipment, or other rooftop elements not intended for human occupancy shall be fully enclosed in a manner consistent with the character, shape and materials of the principal building, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1);
The building proposes parapets above the roof level. The parapets will help screen any roof top mechanical. Please see the attached Building Section & Roof Top Plan.

f. Shadow impact on open space: The location, massing and orientation of portions of buildings in excess of sixty-five (65) feet in height shall be such that substantial shadow impacts on public plazas, parks, and other publicly accessible open space are avoided. In determining the impact of shadows, the following factors shall be taken into account: the amount of area shadowed, the time and duration of the shadow, and the importance of sunlight to the utility of the type of open space being shadowed, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1);
Not applicable. The building is not in excess of 65 feet in height.

g. Wind impacts: The location, massing, orientation and architectural design of a new building or a building addition shall be such that no significant adverse wind impacts are created. In determining the impact of winds, the following factors shall be taken into account: the pre-development and projected post-development wind speeds and their impact on pedestrian movement, comfort and safety; and the impact of projected wind speed the use of and comfort within existing and proposed pedestrian seating areas and other adverse impacts upon the surrounding area;
Although the project will be a 5-story structure from the predevelopment conditions, it's not anticipated to be significant and adverse

h. Setbacks from existing structures: The location and design of proposed structures shall not create a detrimental impact on the structural integrity or the safety of adjacent structures or the occupants thereof;
The project has been design to not have a detrimental impact on adjacent properties.

i. Building tops: Buildings or structures which exceed one hundred fifty (150) feet in height shall be designed so as to provide a distinctive top to the building which visually conveys a sense of interest and vertical termination to the building, as described and illustrated in the Downtown Urban Design Guidelines (Appendix 1);
Not applicable. The building is not in excess of 150 feet in height.

HISTORIC DISTRICT:

Section 14-651. Standards for review of new construction

(a) Scale and form:

1. Height. In addition to the applicable requirements of articles III, IV and V of this chapter, the proposed height shall be visibly compatible with surrounding structures when viewed from any street or open space and in compliance with any design guidelines.
Not applicable - site improvements only

2. Width. The width of a building shall be visually compatible with surrounding structures when viewed from any street or open space and in compliance with any design guidelines.
Not applicable - site improvements only

3. Proportion of principal facades. The relationship of the width to the height of the principal elevations shall be visually compatible with structures, public ways and open spaces to which it is visually related.
Not applicable - site improvements only

4. Roof shapes. The roof shape of a structure shall be visually compatible with the structures to which it is visually related.
Not applicable - site improvements only

5. Scale of a structure. The size and mass of structures in relation to open spaces, windows, door openings, porches and balconies shall be visually compatible with the structures, public ways and places to which they are visually related.
Not applicable - site improvements only

6. Applicability to Congress Street historic district. In the Congress Street historic district, for new construction within the B3 zone, the historic preservation board shall not impose conditions more restrictive than the dimensional requirements (Sec 14-220) of the B3 zone.
Not applicable - the project is not in the location on Congress Street historic district

(b) Composition of principal facades:

1. Proportion of openings. The relationship of the width to height of windows and doors shall be visually compatible with structures, public ways and places to which the building is visually related.
Not applicable - site improvements only

2. Rhythm of solids to voids in facades. The relationship of solids to voids in the facade of a structure shall be visually compatible with structures, public ways and places to which it is visually related.
Not applicable - site improvements only

3. Rhythm of entrance porch and other projections. The relationship of entrances and other projections to sidewalks shall be visually compatible with the structures, public ways and places

to which they are visually related.
Not applicable - site improvements only

4. Relationship of materials. The relationship of the color and texture of materials (other than paint color) of the facade shall be visually compatible with the predominant materials used in the structures to which they are visually related.
Not applicable - site improvements only

5. Signs. Any new sign, and any change in the appearance of an existing sign located on a landmark within an historic district or within an historic landscape district, which is readily visible from any street or open space shall not be incongruous to the historic character of the landmark or district and shall comply with the criteria and guidelines specified in the design manual.
Not applicable - site improvements only

(c) Relationship to street:

1. Walls of continuity. Facades and site structures, such as masonry walls, fences and landscape masses, shall, when it is a characteristic of the area, form cohesive walls of enclosure along a street to ensure visual compatibility with the structures, public ways and places to which such elements are visually related.
Not applicable - site improvements only

2. Rhythm of spacing and structures on streets. The relationship of a structure or object to the open space between it and adjoining structures or objects shall be visually compatible with the structures, objects, public ways and places to which it is visually related.
Not applicable - site improvements only

3. Directional expression of principal elevation. A structure shall be visually compatible with the structures, public ways and places to which it is visually related in its directional character, whether this be vertical character, horizontal character or nondirectional character.
Not applicable - site improvements only.

4. Streetscape, pedestrian improvements. Streetscape and pedestrian improvements and any change in the appearance thereof located adjacent to, or on a landmark, within an historic district or within an historic landscape district which is readily visible from any street or open space shall not be incongruous to the historic character of the landmark or district and shall comply with the criteria and guidelines specified in the design manual.
Not applicable - improvements are on-site only

(d) Other standards:

1. Compatible uses. Every reasonable effort shall be made to provide a compatible use for a property which requires minimal alteration to the character-defining features of the structure, object or site and its environment or to use a property for its originally intended purpose.
The property will continue to be used for its originally intended purpose. No alterations are being made to character-defining features.

2. Distinguishing original character. The distinguishing original qualities or character of a structure, object or site and its environment shall not be destroyed. The alteration of any historic material or distinctive architectural features should be avoided when possible.
The project proposes site improvements only in the historic district. None of the materials to be razed are historic

3. Archeological resources. Every reasonable effort shall be made to protect and preserve significant archeological resources affected by or adjacent to any project. If resources must be disturbed, mitigation measures shall be undertaken.
The proposed site improvements are in areas that have been previous disturbed in the 2000's.

4. Contemporary design. Contemporary design for additions to existing properties shall not be discouraged when such alterations and additions do not destroy significant cultural, historical, architectural or archeological materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the size, scale, material and character of the property, neighborhood and environment.
Not applicable

5. Additions. Wherever possible, new additions to structures and objects shall be undertaken in such a manner that, if such additions were to be removed in the future, the essential form and integrity of the structure would be unimpaired.
Not applicable - no additions proposed

11. Verification HVAC meets state and federal emissions requirements

HVAC equipment has not been specified and selected yet, but Opechee Construction Corporation, as an experienced design/build general contractor with on-staff licensed architects and engineers, will ensure that are specified and installed in full compliance with all codes and regulations, including but not limited to state and federal emissions requirements. The applicant request that the following requirement be made a condition of the planning board approvals:

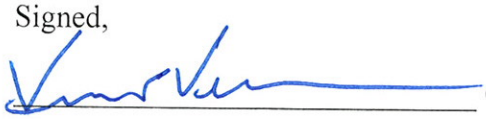
"All HVAC systems and external mechanical equipment shall meet the maximum allowable noise requirements of the zone; each unit shall submit documentation of dBA output to confirm compliance of both the unit and the building in respect of rated noise levels, to the satisfaction of the Zoning Administrator prior to the issuance of a Building Permit for that unit. This requirement shall be included in the Condominium documents."

Neighborhood Meeting Certification

I, Vincent P. Veroneau, President, J.B. Brown & Sons, hereby certify that a neighborhood meeting was held on October 1, 2015 at 85 York Street at 6pm.

I also certify that on September 15, 2015, invitations were mailed to all addresses on the mailing list provided by the Planning Division, including property owners within 500 feet of the proposed development and the residents on the "interested parties" list.

Signed,



October 6, 2015

Attached to this certification are:

1. Copy of the invitation sent

2. Sign-in sheet

3. Meeting minutes

J.B. Brown & Sons
36 Danforth Street
P.O. Box 207
Portland, ME 04112-0207
207-774-5908 (phone) 207-774-0898 (fax)

September 14, 2015

Dear Neighbor,

Please join us for a neighborhood meeting to discuss our proposal to construct an apartment building at the corner of York Street and High Street and a parking structure on the interior of the lot between York Street and Danforth Street.

Meeting Location: 85 York Street, 2nd Floor
Meeting Date: October 1, 2015
Meeting Time: 6:00pm

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, please call 774-5908.

Sincerely,

Vincent Veroneau
J.B. Brown & Sons

Note:
Under Section 14-32(C) of the City Code of Ordinances, an applicant for a major development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting 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 Department of Planning and Development, Planning Division 4th Floor, 389 Congress Street Portland, ME 04101 or by e-mail to: bab@portlandmaine.gov.

Neighborhood Meeting Attendance

On October 1, 2015 the following citizens met with Vincent Veroneau, President of J.B. Brown & Sons at 85 York Street, 2nd Floor, Portland to discuss the development of a 5-story building on the corner of High Street and York Street that will consist of 63 residential units, 17,000+sf of ground floor commercial space, and two (2) levels of parking with access from York Street and Danforth Street.

Name:	Address:	Contact email or telephone:
Jon Damon	45 Park St #1	Jongranitestone@yahoo
Beth + Steve Clark	125 York St. A	clarksteve25@comcast.net
Katy Kelly	88 Spring St	KatyK@maine.rr.com
Erin Foley	33 Park St	efoley19@aol.com
Margaret Broucek	50 Maple St	margaret.broucek@gmail.com
Bryan Van Dussen	48 High St	bvandussen@icloud.com.
Tracy St. Pierre	50 Maple St.	tmstpierre@gmail.com
Bevinn O'Brien	38 High St.	207-774-0951
Erica Schair-Cardena	2 Stratton Pl.	erica_schair@yahoo.com
John Foley	114 York ST	7733778

Minutes of Neighborhood meeting
101 York Street – Multi Use Development Project
October 1, 2015

Vincent Veroneau, President of JB Brown & Sons, introduced the project at the meeting. Mr. Veroneau explained the project would consist of approximately 210 parking spaces in a two level garage along with 63 residential apartments and approximately 17,000 ft.² of ground floor commercial space. The building will incorporate colored bricks at the corner of York and High Street to blend with the residential neighborhood and transition to red brick and granite at the Old Port end of the building.

After the general overview, the meeting was then open to questions.

Will the ground floor space be retail or office?
We do not have any tenants lined up at present. Our hope is local neighborhood retail services, but the market will ultimately determine what uses are viable. There may be a transition period where office uses may make sense, but we would limit it to open floor plan configurations – similar to the CIEE building on the other end of Fore Street.

Do you have your approvals yet?
No, the approval process is in its early stages. It largely begins with this neighborhood meeting. We are scheduled for a Historic Preservation Board meeting on Wednesday, October 7. Our first Planning Board meeting is scheduled for Tuesday, October 13.

Does the Historic Preservation Board need to give approval?
The project is not in an historic district; however, it is within 100 feet. Therefore, they have an advisory review and comment to the Planning Board

Have you been approved for your height request?
We have not asked for an increase in height for this project. You may be referring to the increase in height from 45' to 65' recommended by the Planning Board and currently in front of the City Council. We do not intend to increase the height of the project based on the proposal currently in front of the City Council

What is the height of the project?
Using the average grade of the property, we are within the 45' currently in the zoning code. That said, the average grade calculation does allow for the height along York Street to be in excess of 45'.

What is the status of High St., Court?
High St., Court is a private way and not a City street. We have made arrangements with the other property owners along High Street Court with respect to ongoing access.

Will this project have access on High Street Court?
No, access to the garage will be from York Street and from Danforth Street. Each entry point will only access one level of the garage.

What about traffic?
Given the historic uses on the property, we do not believe traffic will be appreciable worse than the current situation. Traffic is always messy in an urban setting, but on the positive side it indicates an economic vibrancy to the area.

What are some other projects completed by J.B. Brown & Sons?
We recently completed the Courtyard by Marriott on Commercial Street, an office building at Washington Park, and the KeyBank and Starbucks project on Route One in Falmouth

Will stormwater be handled?
We are required to meet Chapter 500 of the DEP regulations. Given the site is largely impervious at the present time; I believe this development will represent an improvement in both water quality and volume control post development.

How will people access the building?
Residential tenant's primary entrance will be off High Street. They will all also have access from the parking garage levels. The retail tenants will access from York Street.

Will tenants have access to parking?
Yes, both the commercial tenants and residential tenants will have priority in leasing parking spaces in the garage. We have sufficient parking for our proposed use and our current parkers on the lot.

The Neighbors appreciated the architecture of the building referencing that it's broken up along York Street and doesn't look like one giant building. Also, they referenced the design of the High Street corner being a different color brick and transitioning to red brick toward the Old Port District, was very well received. The meeting concluded at 6:45 with a general consensus that the project is a very positive improvement to both the corner of York and High Street and for the City of Portland.

Att. T

OPECHEE
CONSTRUCTION CORPORATION

October 20, 2015

Nell Donaldson
City of Portland Planning Division
389 Congress Street
Portland, Maine 04101

Re: York Street Mixed-Use Development – Wind Analysis

Dear Nell,

Pursuant to the review comments from Caitlyn Cameron, Urban Designer, on 9/21/15 referencing the B-3 Urban Design Guidelines Section V – Wind Impacts, we offer the following information.

The surrounding buildings to the proposed project range in heights from 2 stories to three and half stories. The proposed building is 4 and 5 stories (from Danforth and York Streets, respectively) with a height of approximately 44.5' as determined from the average grade around its perimeter. Based on this, we find the proposed building not to be considered "significantly taller than most of the surrounding buildings" and therefore will not have an adverse effect on the wind at its base. Furthermore, the buildings across High Street are more comparable in height than others and thus will provide shelter from the West, and Southwest winds during the summer; conversely the proposed building will provide shelter to those buildings from the Northwest winds during the winter.

Based on this simple analysis, we find that the proposed project and building will not have an adverse wind impacts on the pedestrian traffic.

Please let us know if you need further information regarding this matter.

Sincerely,

Keith A Kelley, Architect
Executive Vice President

11 CORPORATE DRIVE ▪ BELMONT ▪ NH 03220
PHONE (603) 527-9090 ▪ WWW.OPECHEE.COM

OPECHEE
CONSTRUCTION CORPORATION

November 20th, 2015

Nell Donaldson
City of Portland Planning Division
389 Congress Street
Portland, Maine 04101

RE: 101 York Street LLC proposed mixed use building and parking structure.

Hi Nell,

Below you will find our responses in red italics to the comments generated during the City's review.

PLANNING DEPARTMENT COMMENTS:

Transportation

a. Impact on Surrounding Street Systems:
No comments from planning

b. Access and Circulation:

- Please show all doors on revised plans.
  All entrances have been added to the plans.
- The residential entrance is not easily legible for visitors from street. Consider using signs, awnings, or other treatments to emphasize this entrance (or alternately, moving this entrance to High Street or York Street).
  The following revisions have been made to make the residential entrance easily legible from the street:
  - *A canopy with lighting has been added over the entrance.*
  - *A granite landing and steps have been added*
  - *The onsite parking for 27 High Street will be moved to the parking garage. The area between the buildings will become an open decorative brick paver pedestrian plaza.*
  - *Low decorative pole mounted full-cut lights will be utilized to illuminate the new pedestrian plaza for safety.*
  - *A corner marquee has been added into the building masonry for identifying the premise and pedestrian plaza to the residential entrance.*
- On revised plans, please show the sidewalk dimensions in all areas, including both inside and outside the stormwater planters on York Street.
  The stormwater planters have been deleted. A majority of the public sidewalk areas along York

Street and High Street is greater than 6-feet in width. Please refer to the hardscape plans for a clear interpretation of sidewalk. The hardscape plans are at a scale of 1"=16' for measuring.

- It appears that there is pedestrian access to the site from the brick walkway on Danforth Street. However, it's not clear where this walkway leads. Is a pedestrian able to access the garage from this walkway? How?
  Correct, a brick paver walkway is proposed to convey pedestrians from Danforth Street to the parking garage. Pedestrians can continue on the walkway to access the upper deck, or utilize the concrete stairwell to access the lower level garage. Please refer to the hardscape plans for clarification of the sidewalk.
- Where will deliveries occur?
  - *Commercial deliveries will occur on York Street.*
  - *Residential loading/unloading can occur on the pedestrian plaza between the buildings.*
- Please document ADA accessible routes.
  Please see the plan sheet 4.01. The accessible routes have been shaded on the plan. The entire York Street sidewalk has a cross slope at 2% or less.

c. Public Transit Access
No comments from planning

d. Parking:

- Please identify any existing parking agreements which currently encumber the site (e.g. does off-site parking for the Marriott occur here?)
  There are no parking agreements that encumber the site.
- Please verify the total parking supply. The documentation states that 211 spaces are proposed, but the plans show 212.
  There are 211 proposed spaces. The plans have been revised accordingly.
- Per the ordinance, applicants are required to justify plans that exceed the required parking supply by more than 10%. In the revised submittal, please explain.
  As you're aware, the project includes the construction of a parking structure. Economically, it's logical to construct the structure with excess parking to support future development within this city block and surrounding area. In the interim to any future development, the excess parking will be leased monthly to support the City's need for parking.
- Please double check the bike parking calculations:
  Residential – 2 spaces/5 dwelling units (63/5*2) = 26 spaces
  Commercial – 2 spaces/10 vehicle spaces required (73/10*2) = 15 spaces
  The required bike parking calculation has been revised to indicate 39 total bike spaces are required. The applicant continues to provide 20 spaces around the site and is now proposing residential storage units on the first floor within the building. A minimum of 19 units will be large enough to accommodate a bicycle and satisfy the total bike parking requirement. Accordingly, the applicant no longer request the waiver.
- Generally, the city is not inclined to provide bike parking waivers in these types of cases (i.e. there is no evidence that the tenant population or commercial patrons wouldn't use them). Could the remainder of the required bike parking be placed inside the garage or in an interior storage area for use by tenants? (This might actually work better for the residential population than the bike racks in the ROW will.)

Please see the above response regarding interior storage units. The applicant no longer request the waiver.

- Please provide a plan for snow removal
  The owner has indicated that snow will be plowed to temporary storage areas available onsite until crews remove and disposed offsite. A temporary snow storage location for the parking garage has been added to the plan. Other multiple small temporary storage areas will be utilized in logical locations during the snow clearing efforts.

e. Transportation Demand Management (TDM)
A TDM is not required.

Environmental Quality

a. Preservation of Significant Natural Features:
No comments from planning

b. Landscaping and Landscape Preservation

- The landscape plans appear to be missing some labels
  The plans have been revised accordingly.
- Plans show 14 trees which could qualify as 'street trees.' 63 are technically required, meaning that a contribution for 49 will be necessary.
  The landscape plan has been revised and the proposal now includes 12 'street trees.' The applicant will provide the required contribution for the 51 missing trees.
- The plans show little landscaping along the western side of the parking, where there are sensitive uses. Please consider additional landscaping treatment (e.g. fence? Evergreen landscaping?) in this area to better screen it from adjacent back yards.
  The proposal will be a significant improvement to the said area as the current condition has the gravel parking is directly against the existing screen fencing. This proposal will set the parking back a minimum of 25-feet from the property line. Nonetheless, in response to this comment, we added additional evergreen plantings and the existing screen fencing will remain. Also, we are proposing a bio-cell stormwater BMP in this area which will contribute to the buffer.

c. Water Quality, Storm Water Management and Erosion Control
No comments from planning

Public Infrastructure and Community Safety Standards

a. Consistency with Master Plans
No comments from planning

b. Public Safety and Fire Prevention

- The building rear, including the residential entrance, raises some concerns about safety and crime prevention through environmental design. Please address sight lines (will the exterior walls of the parking deck obscure visibility into this area? How will the fence at 27 High affect visibility?) and natural surveillance in the revised submittal.
  As mentioned above, the project now proposes a plaza for access and circulation to the residential

entrance from High Street to improve the legibility of the entrance from the public way. In addition, the concerns related to safety and crime prevention have been improved through the following environmental design items: :

- *A canopy with lighting has been added over the entrance.*
- *The wider and open pedestrian plaza*
- *Low decorative pole mounted full-cut lighting will be utilized*
- *A corner marquee has been added into the building masonry for identifying the premises and plaza to the residential entrance.*

d. Availability and Adequate Capacity of Public Utilities

- Please clarify the plan for retail/restaurant trash removal. The submittal indicates that waste will be removed 'individually' to off-site containers? In practice, how will this work? Will there be interior trash rooms for interim storage?

  Currently, no common interim storage space is proposed for the commercial space. It's anticipated that interim trash storage space will provided individually within the units and will be addressed during their unit floor plan designs. As mentioned previously, the tenants will remove their trash individually to an offsite location provided by J.B. Brown.

Site Design

a. Massing, Ventilation and Wind Impacts

No comments from planning

b. Shadows

No comments from planning

c. Snow and Ice Loading

No comments from planning

d. View Corridors

No comments from planning

e. Historic Resources

No comments from planning

f. Exterior Lighting

- All lighting should be full cutoff per the City's TM

  All site lighting is full cutoff as per the standards of 12.2 of the City's Technical Manual. All architectural lighting (architectural wall sconces) will be directed downward as per the standards of 12.4 of the City's Technical Manual.

- The plan shows some light trespass to the north (the max at the property line is 0.1 fc). Can this trespass be addressed?

  The applicant will provide a letter from the abutting land owner indicating agreement to the minor trespass for the purpose of driveway illumination and public safety & security.

g. Noise and Vibration

No comments from planning.

h. Signage and Wayfinding

No comments from planning. The applicant request that a signage and wayfinding plan be required as a condition of approval.

i. Zoning Related Design Standards

- Please provide renderings showing views of the building from above, looking down High Street (which is a protected view corridor), and from Danforth Street.
  The renderings have been provided. Updated renderings will submitted prior to the public hearing.

Subdivision

No comments at this time, although note that the plat has been forwarded to corporation counsel and the city's surveyor for comment.
Please see comments below from the city surveyor. We have not received comments from corporation counsel. The applicant request that, as a condition of approval, the subdivision plan be finalized and recorded prior to the issuance of building permit.

Additional Submittals Required

On the plans, please show:

- Distance to property lines *The dimensions have been added to the hardscape plans.*
- Dimensions of major elements (e.g. curb cut/driveway from York Street, sidewalk dimensions) *The dimensions have been added to the hardscape plans and site plan sheet C3.01.*
- Doors *The entrances are now included on all the applicable plans.*
- Clarify what is planned for area east of Danforth Street drive (see C7.03, which shows off-street parking from the adjacent lot encroaching onto the site)

Fifty Danforth Street will continue to lease parking. The subject property and 50 Danforth are in common ownership so there is no encroachment.
Sewer capacity letter *A wastewater capacity application was submitted. The acceptance letter is pending.*
Snow plan *The owner has indicated that snow will be plowed to temporary storage areas available onsite until crews remove and disposed offsite. A temporary snow storage location for the parking garage has been added to the plan. Other multiple small temporary storage areas will be utilized in logical locations during the snow clearing efforts.*
Soil conditions and locations of test pits and borings *This information has been provided.*
Sign plan *The applicant request that a signage and wayfinding plan be required as a condition of approval prior to the issuance of a certificate of occupancy.*

Zoning

The application includes a request for a 'waiver' of the 5' build-to line requirement on York and High Streets. The plans also show additional setback on the Danforth Street frontage. Note that, given the existing plans, the Planning Board will consider this dimensional requirement with respect to all three of these frontages.
The frontage on Danforth Street has been deleted. The applicant requests the planning board to use the discretion afforded to the board from the ordinances and approve the project as shown.

CITY ARBORIST COMMENTS:

The York Street project 'street view' from York Street is a critical part of the overall tree & landscape design review. Attached is our recommended raised granite tree planter detail and photo. These have proven to be very efficient at protecting trees from compaction and deicing salt which are the top two limiting factors on urban street tree survival. The proposed rain planter feature is also a good design and storm water element for this project. It also helps define the street edge and circulation due to grade changes along the curb line. The placement location and design of the rain planter is also important. Having adequate space between the street curb and planter is recommended to be around 3' in width. This planter may include street trees as well as woody & herbaceous plantings. The parking lot area should also receive green screening in the form of green wall or planted trellis along with trees and shrubs where space allows. More information is needed in regards to planter design, location along with the street tree placement. Providing space for pedestrian travel up York & High Streets along with space enough for standard sidewalk clearing equipment should be a standard goal. *The storm water planters have been deleted from the proposal. This was a result of creating a consistent York Street cross section and alignment and reduced sidewalk width. In addition, the sidewalk no longer has the width to accommodate raised planters in front of the building. The project will utilize the city tree grate detail along the building façade. However, one raised granite planter will be installed to the east of the building.*

CITY SURVEYOR COMMENTS:

1. State Plane Coordinates at noted locations.
   The subdivision plan has been revised.
2. Set property corners.
   The subdivision plan has been revised. This requirement can be made a condition of approval prior to issuance of a certificate of occupancy.
3. Set the two monuments at the end of the 51.63 foot boundary line end points rather than on three foot offset. The three foot offset points are too close to the curb line.
   The subdivision plan has been revised.
4. Will the City be granted sidewalk/pedestrian easements along York Street? It appears there may be some planters going in.
   The planters in the public right-of-way have been deleted. The owner intends to grant public pedestrian easements for the portions of public sidewalk that will be on private property. This requirement can be made a condition of approval prior to issuance of a building permit.
5. Will the West Company be granted an access easement to use the Danforth Street entrance? *Yes. This requirement can be made a condition of approval prior to issuance of a building permit.* Also, will a portion of High Street Court be blocked off to West Company access due to the boundary line? *Yes. West Company will relinquish their rights to High Street Court. Their existing access on High Street Court will be removed and blocked with landscaping. This requirement can be made a condition of approval prior to issuance of a certificate of occupancy.*

6. Will High Street Court and Palermo Road be abandoned within the project area?
   Yes.
7. What will come of the remainder of High Street Court? Will it remain as part of JB Brown property or conveyed to abutters?
   A portion of High Street Court will be used for the proposed development. The remainder of High Street Court will remain JB Brown property with a granted right-of-way to 41 and 51 High Street.

Subdivision Plan needs a Professional Land Surveyor signature and seal.

The final plan subdivision plan will be prepared by Gorrill-Palmer and accordingly the plan will be reviewed and certified by Owen Haskell Inc. This requirement can be made a condition of approval prior to issuance of a building permit.

TOM ERRICO COMMENTS:

1. The York Street design needs to be revised to meet the City's Complete Streets Policy. The following notes specific items for considerations
   a. The design should provide for a consistent horizontal alignment between High Street and Maple Street.
      The York Street alignment and cross section have been revised to implement a more uniform alignment along the project's frontage.
   b. York Street should include bicycle lanes - although a shared-use facility is likely on the eastbound approach at High Street.
      A bike lane is now proposed. Shared-use markings are being utilized when approaching the High Street intersection.
   c. On-street parking is acceptable - assuming it can fit with other cross-section needs.
      The project now proposes 5 on-street parking spaces with a 2' shoulder and a uniform 5' wide bike lane.
   d. The dedicated right-turn lane into the site should be eliminated.
      The right-turn lane has been deleted.
   e. The radius on the northeast corner of the High Street/York Street intersection should be considerate of a possible conversion of High Street to two-way flow.
      The radius has been re-evaluated and the curb radii accommodates a bus turning movement. Please see the Bus Turning Template addendum.
   f. The project should include replacement of the existing traffic signal mast arm structure at the northeast corner of the High Street/York Street intersection.
      The project as designed allows for the existing traffic signal mast arm to remain. The Applicant is unaware of plans by the City to upgrade the traffic mast arms at this intersection. There is adequate space at the barrier free ramp to maneuver around the pole.
   g. All crosswalks and sidewalk ramp configurations should be clearly illustrate such that ADA compliance can be determined. Detectible warning panels need to be provided at all public street crossings.
      The plans show the crosswalk and curb ramp improvements. The detectable warning strips are provided in the details.

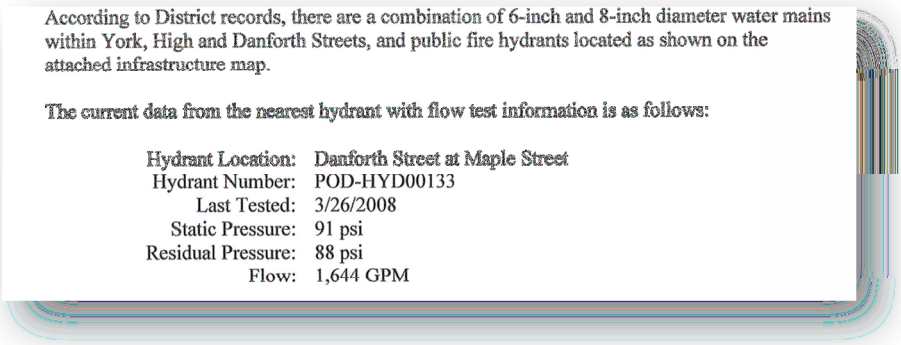
h. The plan needs to show how vehicle lanes transition east of the site to Maple Street.
The plan view has been extended to Maple Street. The plans show the extents of the Applicant's proposed improvements and the existing conditions. The center line is continuous to Maple Street. Thus, there doesn't appear to be any vehicle lane transition for through traffic.

2. The applicant has conducted a trip generation analysis for the project site that indicates the site will generate less than 100 trips when credit for prior uses is included. The applicant should provide specific information regarding the prior uses such that double counting of trips is not occurring. This is relevant as it relates to the need for a Traffic Movement Permit.
A revised traffic report has been submitted.
3. The applicant should conduct a safety analysis of crash information for York Street and Danforth Street and at the High Street intersections with York Street and Danforth Street.
A revised traffic report has been submitted.
4. I have reviewed the parking analysis and concur that an adequate parking supply will be provided for the project (with an excess supply).
An updated parking analysis has been submitted to reflect the latest revisions.
5. I find the design of the parking levels generally to be acceptable with the following comments.
    a. Compact parking spaces are slightly larger than City standards. I support a waiver from the City's technical standards.
    Some compact spaces are longer than the City standard of 15-feet. All compact spaces are 8' wide per City Standard. The applicant request the waiver.
    b. One circulation lane is 21 feet wide and does not meet City standards. I support a waiver from the City's technical standards.
    The design intent within the garage is to provide no less than 24-feet behind parking spaces and no less than 20-feet for drive aisles without parking. Please note that all parking spaces have a minimum of 24-feet circulation width behind the space. Please reconsider whether a waiver is required.
    c. The driveway width at York Street should be dimensioned on the plan.
    The dimension has been added.
    d. The layout of the parking level accessed via Danforth Street should be provided for review and approval.
    The upper deck layout is found on sheet C3.01 and an inset.
    e. The applicant should note whether the driveway on Danforth Street meets City driveway separation standards. While conditions currently exist, bringing the driveway into conformance may be desired.
    The Applicant proposes to maintain the existing curb cuts in their current condition. The existing curb cuts have 60-feet of separation measured per the City's technical standards.

I have reviewed the construction management plans and need to continue to review, particularly as it relates to sidewalk closures and detours.
The Applicant request that the review and submittal of final construction management plans be required as a condition of approval prior to the issuance of a building permit.

FIRE DEPARTMENT COMMENTS:

1. A Life Safety Evacuation Plan shall be submitted with the Building Permit detailing the exiting and waiting area for occupants.
   A life safety evacuation plan will be developed and submitted during the building permit process.
2. Analysis whether emergency vehicles can be supported on the second floor deck of parking garage.
   The parking deck cannot support a fire truck.
3. Fire vehicle access:
   a. Largest Fire Department Vehicle must be able to navigate through the parking lot to access building
      Fire Department Access shall have an unobstructed vertical clearance of not less than 13 ft 6 in
   b. Vertical clearance shall be permitted to be reduced, provided such reduction does not impair access by fire apparatus, and approved signs are installed and maintained indicating the established vertical clearance when approved
      For all of the above; the parking garage is not designed to accommodate fire trucks.
4. Premises identification:
   a. 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
   b. Street addresses shall be marked on the structure and shall be as approved by the City E-911 Addressing Officer.
   c. If the building entry faces a different street, both the street name and number should be large enough to read from the street.
   d. Address numbers must be a minimum of 4 inches high.
   e. The number should be in Arabic numerals rather than spelled out (for example, "130" instead of "One Hundred and Thirty').
   f. Color: Addresses should be in a color that contrasts with the background. Whenever possible, should be illuminated.
      The applicant provide all of the above.
5. Fire Suppression:
   a. There should be sufficient water supply for the proposed building but would like to see an analysis done per NFPA1.
      Portland Water District has provided current flow test data from the hydrant located at Maple Street and Danforth Street. Please see the following snippit. An analysis per NFPA1 will provided during the building permit process.



According to District records, there are a combination of 6-inch and 8-inch diameter water mains within York, High and Danforth Streets, and public fire hydrants located as shown on the attached infrastructure map.

The current data from the nearest hydrant with flow test information is as follows:

Hydrant Location:	Danforth Street at Maple Street
Hydrant Number:	POD-HYD00133
Last Tested:	3/26/2008
Static Pressure:	91 psi
Residual Pressure:	88 psi
Flow:	1,644 GPM

6. Hydrants:
    a. Fire Department Connections shall not be located where large diameter hose may block egress. (2009 NFPA 1 18.3 Water Supplies and Fire Hydrants).
    A fire department connection has been provided on the York Street façade off the mechanical room located at the easterly side of the building. Please see the hardscape plan.

WOODWORD & CURRAN COMMENTS:

1. The project will disturb more than one acre; the Applicant has noted that the proposed project will require a Stormwater Permit-By-Rule/Notice of Intent to Comply with the Maine Construction General Permit. Please provide a status for filing the PBR/NOI with MaineDEP.
    A PBR (NOI) has not been filed with MaineDEP to date. The applicant anticipates starting construction in the spring. We request that this requirement be made a condition of approval prior to issuance of a building permit.
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 general accordance with Appendix A, B, & C of MaineDEP Chapter 500.
    Agreed.
    b. General Standard: The project will result in a net increase in impervious area of approximately square feet. As such, the project is required to include stormwater management features for stormwater quality control. Stormwater planters are proposed along York Street to provide treatment for a portion of York Street to offset this increase in impervious area. This is an acceptable approach to managing stormwater quality; however, additional comments and concerns have been raised associated with accommodating traffic, bicycles, and pedestrians within the York Street Right-of-Way, which may preclude the ability to fit these planter systems in this area. It should be noted that the City would accept a stormwater quality measure in the area around or within the swale above CB2 (along the south edge of the parking garage) as an acceptable means of meeting the stormwater quality standards for the project. If a depressed planter/filter area is proposed within or adjacent to the traveled way, some measure should be taken to demark the edge through the use of a raised curb or rail.
    Stormwater treatment efforts have been moved to CB2 and is now a bio-retention cell BMP. In addition, a wood guardrail fence has been added to protect the BMP and demark the edge of the bio-cell.
    c. Flood Standard: The project will result in a net increase in impervious area of approximately 1,236 square feet. As such, the project is required to include stormwater management features to control the rate of stormwater runoff from the site. Systems such as the stormwater filter planters provide an acceptable means of managing the rate of stormwater discharge from the site. As noted in the Application, a majority of stormwater runoff will now be separated from the

combined sewer and discharged to the newly installed drainage in High Street.
The increase in impervious area will result in a negligible increase in runoff. The project proposes stormwater treatment for the small amount of excess impervious area and will also provide attenuation of the runoff. Additionally, it should be noted that the project will mitigate the city's capacity issue at the intersection of Maple & Commercial Streets by redirecting the site's runoff to the newly installed drainage in High Street.

3. The Stormwater Management Plan should include a stormwater inspection and maintenance plan developed in accordance with and in reference to Chapter 32 of the City of Portland Code of Ordinances.
The applicant requests that a final stormwater inspection and maintenance plan be required as a conditional of approval prior to issuance of a certificate of occupancy.
4. Maintenance of any stormwater quality treatment measures proposed in the City Right-of-Way will be the responsibility of the property owner; as such, agreements will be needed to define these responsibilities. The City has executed similar agreements on other projects and can help coordinate the language carried in these agreements.
The stormwater planters have been deleted. The required stormwater treatment measures will be implemented at CB2 adjacent to the shared patio and parking deck.
5. Sheet C4.01 - The Tide-Flex Checkmate inline valve should be installed in close proximity to a manhole structure so future access to the valve can occur without the need to cut into the City Street.
The valve is now located in close proximity to DMH3.
6. A detail should be provided and location should be noted on the plans for the garage floor drain oil/water separator system.
The catch basins with lower level garage have been shown on the plan. The details of the oil/water separating catch basins are forthcoming.
7. The plans should note a location for snow storage. The snow storage location should be sited outside of existing and proposed drainage courses.
The owner has indicated that snow will be plowed to temporary storage areas available onsite until crews remove and disposed offsite. A temporary snow storage location for the parking garage has been added to the plan. Other multiple small temporary storage areas will be utilized in logical locations during the snow clearing efforts.

URBAN DESIGNER COMMENTS:

B-3 Downtown Urban Design Guidelines (Appendix 1)
I. Relationship to the Pedestrian Environment

A. Distinguish the lower 35 feet of building facades

1. **Storefronts and building facades**
- Relationship to Context – Not Met – *the design of storefronts and the facades of lower portions of buildings should relate to the architecture of the rest of the building and should demonstrate a unified overall building design.*

- There is too much artificial variation in the facade design. The length of the building should be broken up in a way that is authentic and reflects the inherent building systems and function. The architectural style should not alter so much - this is one building.

Through a collaborative process with the City Planning Staff the design has evolved to address issues of massing and

materials. The design differentiates the street scape (lower 35 feet) with a granite base, large storefront openings, and awnings.

- Pedestrian character – Met –

- Materials and detailing

- Material choices need to be indicated on the elevation drawings and in the project narrative. *The materials and detailing have been added to the elevations.*
- Storefront materials, details, and spacing should be consistent throughout the ground floor of the project. A change in the storefront design is logical at the point where the façade becomes recessed, but currently, too much variation is shown in the storefront design across the length of the building. *This has been addressed through a collaborative process with the City Planning Staff.*
- Change in material should emphasize use - retail storefront vs. residential above. Use granite or stone to emphasize residential entry points, not to artificially break up the storefront facades. *This has been addressed through a collaborative process with the City Planning Staff.*
- Details such as cornices, belt lines, water tables, should be cohesive throughout the building. *This has been addressed through a collaborative process with the City Planning Staff.*

- Transparency – Met – *No response necessary*

- Contemporary design – Not applicable – There is no surrounding retail context *No response necessary*

2. **Building entrances**

- Compatibility with the building façade – Not Met – Compatibility is less of an issue as emphasis and visibility – further design is requested. Use granite or stone to emphasize residential entry points, not to artificially break up the storefront facades.

The residential use of the building has one entry which is located within the pedestrian plaza off High Street. The entry is emphasized by a change in material, the addition of a roof canopy and the addition of a granite landing with steps. In addition, the commercial entrances have been added to the plans and elevations.

- Prominence along the street – Not Met – The two residential building entrances are not readily identifiable and do not have prominence on the building's street facades. This should be addressed through strategies such as material choice, canopies or projections, detailing, and/or lighting.

The residential use of the building has one entry which is located off a pedestrian plaza adjacent to High Street. The pedestrian plaza presents an environment similar to that of a streetscape and utilizes brick, granite, and plantings that are visually inviting to pedestrians. The main entry door is set back approximately 40' from High Street and is delineated by a change in material, the addition of a roof canopy and the addition of a granite landing with steps. The elements of Main Entry and Positive Outdoor Space (which are patterns in Christopher Alexander's seminal book "A Pattern Language") will contribute to the character of Portland's Downtown environment.

- **Access to the street – More information needed, Not Met–** Street-level retail entries are not indicated. For any off-street entrance, prominent access directly from the street should be provided to the extent feasible.

Revised drawings indicate the frequency and location of retail entries along York Street. Please refer to the submitted graphic materials for your review.

- **Accessibility – Met –** *No response necessary*

3. **Blank Facades – Met –** *No response necessary*
4. **Special Features – Not applicable –** *No response necessary*

B. Pedestrian Activities District (PAD) – **Not applicable –** *No response necessary*

C. Sidewalk Areas and Open Space – Met – The project appears to follow traditional material and technical standards. More information is requested regarding the pedestrian amenities in the widened sidewalk area. see II. B. *The hardscape plan indicates an area for outdoor seating within the widen sidewalk area*

D. Pedestrian Amenities – Met – Some seating walls and planters are indicated. More information is requested regarding the pedestrian amenities in the widened sidewalk area. see II. B. Landscaping at residential entrances,

plaza, and sidewalk furnishing zone is appropriate. Landscaping and planters should not be placed against storefront. *Please refer to the hardscape plan. As mentioned, the residences will have landscaping, a plaza, and a common patio with 27 High Street. Also, the parking garage will incorporate a raised entry patio and planters for an inviting entry off the garage. Please note that the area of widen sidewalk referenced above has been reduced to address concerns related to the York Street alignment and cross section. An outdoor seating area has been proposed for is said widened sidewalk area.*

E. Sidewalk Vendors and Sidewalk Cafes – More information needed – see II. B.
No information can be provided at this time since there are no commercial tenants committed to the space. Certainly, there is opportunity for sidewalk venders and outdoor seating. An area for outdoor seating has been delineated on the hardscape plans.

F. Urban Open Spaces – More information needed – see II.B.
See response provided in II.B.

II. Relationship to Existing Development

A. Integrate with, respect and enhance – More information needed, Not Met – *Proposed development shall respect, enhance, and be integrated with the existing character of the general pattern of development in the Downtown, surround building environment and streetscape.*

The design is integrated with the existing character of the general pattern of development in the Downtown, surrounding building environment and streetscape in two ways; first, by using similar materials – brick masonry , granite masonry, and large storefront windows and second, by recognizing the adjacencies of the Old Port and West End city districts in the delineation of massing and locational use of materials.

1. **Street walls and building setbacks – Met –** The proposed building setback on High Street does follow the pattern of the block. *The proposed building is positioned at the 5-foot build-to-line and is zoning compliant along High Street. To protect the view corridor down High Street, the building is positioned at the maximum setback of 5-feet.*
2. **Open Space – Not applicable –** *No response necessary*
3. **Building form, scale and massing:**
    - Particular attention should be paid to the relationship of the new building to the existing historic context on High and Danforth Streets. The form adjacent to the single-family houses should be moderated. *This has been addressed through a collaborative process with the City Planning Staff.*
    - Additional views of the proposal in relation to the context on High and Danforth Streets is requested. *The realistic three-dimensional views have been provided.*
    - Refer to the Historic Preservation Board advisory review for further guidance on how to achieve compatibility with neighboring historic structures. *This has been addressed through a collaborative process with the City Planning Staff.*
4. **Building façade proportion and composition – Not Met –** *In the design of larger buildings it is particularly important to examine opportunities to compose the building both horizontally and vertically, respecting the character of buildings nearby through a contextually sensitive design while creating an interesting and creative individual building. . . . Further, buildings Downtown frequently have a horizontal composition characterized by regular window openings set within distinctive bay spacing.*
    - There is too much artificial variation in the facade design. The length of the building should be broken up in a way that is authentic and reflects the inherent building systems and function. The architectural style should not alter so much - this is one building.
    - Consistent use of materials is desired as opposed to yellow and red brick on one building.
    - Bay spacing should be consistent – clear building systems, prevailing patterns, and a hierarchy.
    - Fenestration patterns should create a sense of rhythm and scale to the building horizontally and vertically with consistent window spacing, types, and sizes.
    - Details such as cornices, belt lines, water tables, should be cohesive throughout the building.

All of the above comments have been address through a collaborative process with the City Planning Staff via workshops on October 7, 13, 21, and Nov. 9. The design has evolved to address the fenestration (proportion of openings within the wall) as well as the building's massing materials. Please refer to updated submitted graphic materials.

5. **Pedestrian circulation and building entrances – More information needed –**
    - Although storefront is planned for most of the York Street façade, building entrances are not indicated and cannot be evaluated for their frequency.

Revised drawings indicate the frequency and location of retail entries along York Street. Please refer to updated submitted graphic materials.

6. **Parking garages and surface lots – More information needed, Not Met –**
    - Screening should be provided between the garage and the rear yards of the adjacent properties and potentially screening the parking from Danforth Street. Please provide a plan to accommodate that. *The proposal will be a significant improvement to current conditions. Currently, the said area is gravel parking to directly against the existing screen fencing. This proposal will set the parking back a minimum of 25-feet from the property line. Nonetheless, in response to this comment, we added additional evergreen plantings and the existing screen fencing will remain. Also, we implemented a bio-cell stormwater BMP in this area which contributes to the buffer.*
    - A view of the proposal from Danforth Street is needed to evaluate how the building and parking are integrated with the existing streetscape. *The view has been provided.*
    - The parking entrance from Danforth Street should be designed so as to not disrupt the pedestrian environment. *The driveway is from an existing curb cut condition and is a typical curb cut. The intent of this comment is not clear.*

Areas within downtown – Not applicable – *No response necessary.*

B. **Standards for increasing setback beyond street build-to-line – More information needed** – *In order for proposed exceptions to this pattern of predominant street wall to be acceptable, the applicant must demonstrate to the Planning Board that the introduction of additional setbacks at the street level satisfies the following:*
    1. *Open space and amenity*
    2. *Prevailing character and continuity*
    3. *Support for existing open space*
    4. *Quality and orientation*
        - Further information is needed regarding the open space created by the setback on York Street in order to determine if it meets the criteria for setback variation. For example, is there landscaping, building entries, seating provided, public access?

We believe most would agree that this portion of York Street has an unusual right-of-way with varying widths and jogs in the alignment. Thus, the positioning of an practical economically viable 300-foot long structure along the right-of-way results with portions of the building setback further than the narrow envelope created by the 5-foot build-to-line. However, the applicant perceives these increased setback areas as an opportunity to support open space amenities such as building entries, outdoor seating, street trees, bike racks, and municipal lighting. In addition, the applicant utilizes the unusual alignment as opportunity to extend a portion of the building out to the intersection and provide an "anchor" feature for the "gateway." Also, please consider that the increased setback also provides for additional public amenities within the municipal right-of-way as well. In addressing comments from the City traffic consultant, the proposed York Street curb line becomes in very close proximity to the right-of-way and doesn't allow for adequate sidewalk widths within municipal right-of-way. Thus, the increased building setback provides pleasant sidewalks widths while accommodating east-west bound bike lanes, east-west bound sidewalks and on-street parking. Given the explanations above, the applicant believes the project meets the intent of the guidelines and there is no reason to believe project will be detriment the intent of the "downtown" district – we consider the proposal an improvement. An example development that sets precedent within the B-3 Downtown Business District is the Hampton Inn at the corner of Franklin Street and Fore Street. The primary intent of the increased setback along Fore Street was to provide outdoor seating for Sebago Brewing.

III. Roof-Top Appurtenances – More information needed – As of 9/21/15 information about rooftop appurtenances has not been provided. In developing the mechanical plans for the project, keep this standard in mind.

The design provides parapet walls to screen mechanical rooftop equipment. Please refer to submitted Building Section & Roof Plan.

IV. Shadow Impact on Open Space – **Not applicable** – As of 9/21/15 no portion of the building is in excess of 65' in height. *No response necessary.*

V. Wind Impacts – **More information needed** – As of 9/21/15 information about wind impacts has not been provided. *Refer to 'Wind Analysis' letter dated October 20, 2015 from Keith Kelley, Architect to Nell Donaldson, City of Portland Planning Division.*

VI. Setback from Existing Structures – **Met** – New development does not appear to impact the structural integrity or general safety of neighboring structures. *No response necessary.*

VII. Building Tops – **Not applicable** – As of 9/21/15 no portion of the building or structure exceeds 150' in height. *No response necessary.*

VIII. View Corridors, Visual Landmarks, and Gateways

A. **View Corridors** – **Not applicable –**
B. **Visual Landmarks – Not applicable –**
C. **Gateways – Not Met –** The site is identified as an existing significant Gateway *High Street* and *The Million Dollar Bridge to York Street* . . . *there are opportunities to enhance these entrances by preserving view corridors and panoramic skyline views along or from these corridors, reinforcing and enhancing the scale, character and placement of buildings along these entrance routes . . . Proposals for development along Gateway entrances to the Downtown are encouraged to examine and reinforce the unique character and opportunity of that gateway entrance in terms of the design and siting of buildings, land uses, and streetscape improvements.*

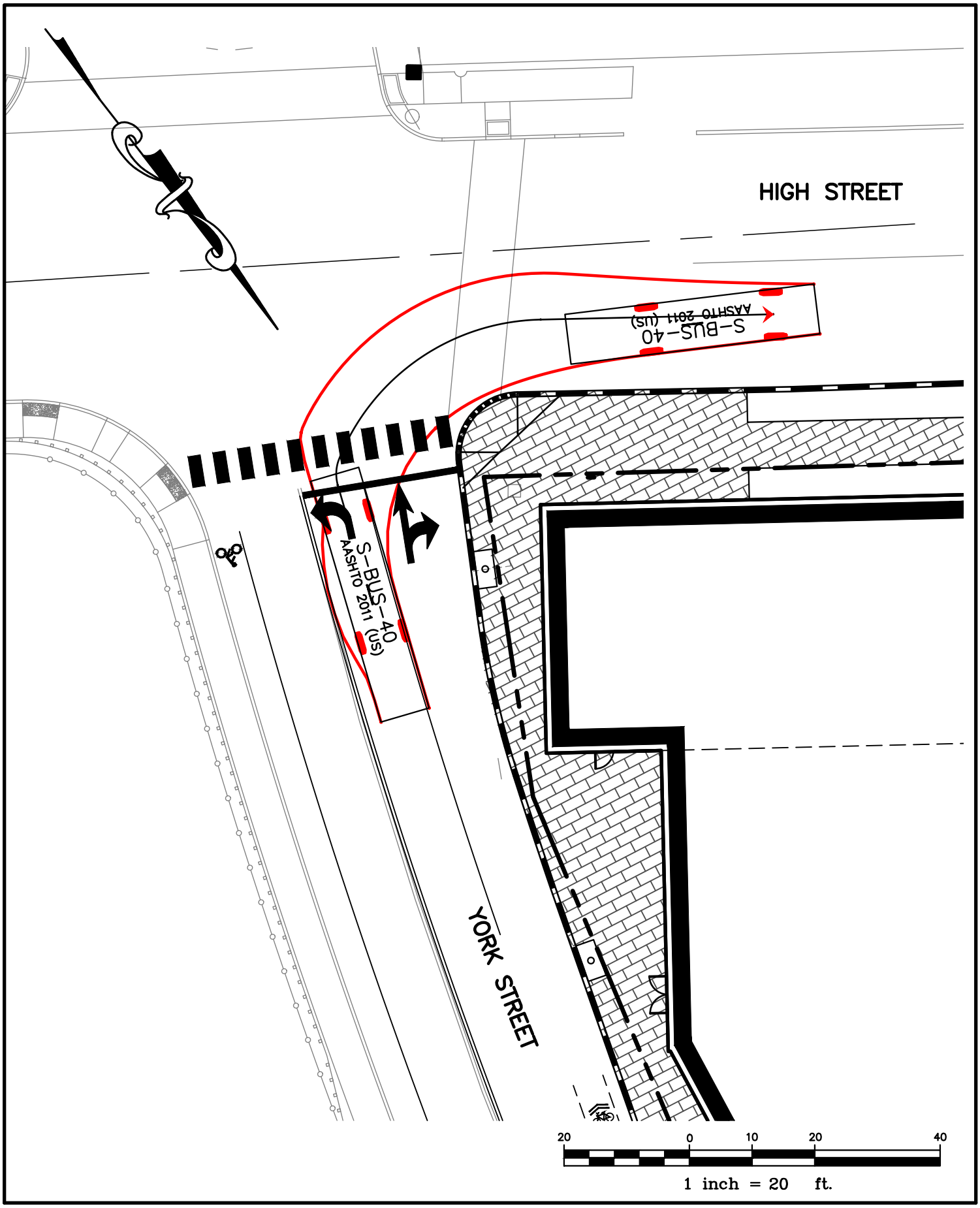
- The building placement at the corner does meet the standard. However, the architecture does not include special corner treatments or acknowledgement of the "gateway" status of the corner. Staff recommends some kind of architectural emphasis on the upper floors of the building corner at High Street to provide a visual significance of "gateway." For example, each side of the corner should relate to each other because the building will be viewed obliquely from most approaches. Other strategies might include lighting, material change, details that emphasize the corner.
- Further guidance from the Planning Board is sought on how to meet the standard.
- The unique and positive aspects and opportunities of this gateway include "this entry to Downtown provides an opportunity to get a sense of the residential and evolving commercial districts which surround and are so important to the Downtown."
- The *1983 Gateways to Portland* study provides guidance:
    - Create a newcomer's first impression of the city;
    - Provide a clear orientation and guiding symbol;
    - Provide unique areas for residents and commuters to observe and relate to their city, broadening an understanding of their city;
    - Provide pleasure of experiencing an attractive and more livable urban environment;
    - Image and potential economic impact

Through a collaborative process with the City Planning Staff via workshops on October 7, 13, 21, and Nov. 9, the design has evolved to address the above guidelines and presents an attractive and improved livable urban environment at this "gateway" intersection. Please refer to submitted graphic materials and plans.

IX. Signage/Awnings/Canopies – **More information needed –** As of 9/21/15 no information was provided regarding potential signage, awnings, or canopies. In developing any signage plans, keep the requirements of this standard in mind. *Please refer to submitted graphic materials – specifically, color rendered exterior elevations showing awning and signage along York Street.*

Please don't hesitate to call with any questions or concerns.

Barry Stowe
Opechee Construction Corporation



Design: CEH	Date: NOV 2015
Draft: CG	Job No.: 3018
Checked: AMP	Scale: 1"=20'
File Name: 3018-SP.dwg	

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Project:
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Figure No.
1

Att. V

From: Barry Stowe <barrys@opechee.com>
To: Helen Donaldson <HCD@portlandmaine.gov>
CC: "Vincent Veroneau (veroneau@jbbrown.com)" <veroneau@jbbrown.com>
Date: 12/1/2015 1:41 PM
Subject: RE: JB Brown York Street Development
Attachments: 101 York St - Light TrespassLetter from West Company 11-30-2015.pdf

Hi Nell,

Please see below and attachment for our responses to your lighting comments:

- Can you verify that the specs you've shown in Sheet 8.02 match the photometric plan? I'm not finding the Nautilux light there? Maybe it's the same as the 'Bridgelux'?

That's correct – Bridgelux manufactures the LED lamp used in the Nautilux light fixture which is manufactured by Luminis. We can update the lighting schedule to include the fixture family name along with the manufacturer and catalog number. Please see yesterday's email for verification.

- Also, you've highlighted some details from the Nautilux spec on Sheet 8.02, but I can't read them on my pdf. I assume they're related to it being downward directed?

That's correct – I highlighted any information related to the architectural lights ability to be directed downward. It is unfortunate the PDF is not clear on your computer. I've checked the quality of the PDF on several different programs and computers here and it appears to be legible. Please see the below snippit for a blow-up of that information:

- The photometric plan continues to show trespass onto the 27 High property and the two properties to the north. I know some of these properties are owned by Vin, but is there any way you can bring these numbers down? I'm thinking about those parcels being sold down the line.

All the property owners have giving consent and acceptance of the project's proposed lighting and associated trespass. I've addressed the intent of the lighting for each instance below:

-27 High Street: This property is in common ownership with the proposed project. The lighting is proposed to provide safety, security, and a presence of entry for the common plaza between the two properties. These are three elements of design that were asked to be addressed in other comments. The lighting will negate any "back alley" feel and provide light for tenants of both properties as they walk between the garage, high street, and the entrances.

-78 Danforth Street: Attached is a letter from the owner of 78 Danforth Street. Please note there is more aggressive existing lighting that currently exist in this same location and will be removed as part of this proposal. The proposed lights are necessary in continuing to provide safety, security, and a presence of driveway entry for both properties. The intent of the proposal is to provide lighting for the parking lots, the garage stairwell, sidewalk and driveway lighting.

-58 Danforth Street: This property is in common ownership with the proposed project. This property is not a sensitive use and leases parking in a commercial context which requires lighting. Also, please note that the proposal will also remove existing lighting that provides lighting for this portion of 58 Danforth Street. The proposal is to replace that existing lighting for safety and security.

[cid:image001.jpg@01D12C3D.DD9F8020]

[cid:image007.png@01D12C21.F7A825B0]

Best,

Barry Stowe

Opechee Construction Corporation

11 Corporate Dr | Belmont | NH 03220

P (603) 527-9090 | F (603) 527-9191

barrys@opechee.com | www.opechee.com

From: Helen Donaldson [mailto:HCD@portlandmaine.gov]

Sent: Tuesday, November 24, 2015 5:07 PM

To: Barry Stowe

Subject: Re: JB Brown York Street Development

Barry,

I've had a chance to go through the plans. My only follow up questions have to do with lighting (sorry!).

- Can you verify that the specs you've shown in Sheet 8.02 match the photometric plan? I'm not finding the Nautilux light there? Maybe it's the same as the 'Bridgelux'?

- Also, you've highlighted some details from the Nautilux spec on Sheet 8.02, but I can't read them on my pdf. I assume they're related to it being downward directed?

- The photometric plan continues to show trespass onto the 27 High property and the two properties to the north. I know some of these properties are owned by Vin, but is there any way you can bring these numbers down? I'm thinking about those parcels being sold down the line.

I'm also attaching comments from David Senus. Give me a shout tomorrow if you have questions on them.

There will be more comments forthcoming. I'll send them as I get them.

Thanks, Barry. I'll be in touch.

Port Property
MANAGEMENT

To: The City of Portland
Fr: Tom Watson, West Company/Port Property
Da: November 30, 2015
Re: Light Trespass at 78 Danforth St., Portland

Dear City of Portland:

West Compan is the owner of 78 Danforth Street in Portland. I am the President of West Company and am writing this letter at the request of Vin Veroneau of JB Brown & Sons. I have met with Vin at the site and reviewed the plans.

Please take this letter as my consent and acceptance of the lighting proposed for the York and High Street development as referenced on the Lighting & Photometrics Plan (# C8.01).

If you have any questions, please call. My office number is 207-771-2883.

Yours,

Tom Watson
West Company
Port Property Management
104 Grant Street
Portland, Maine 04101

From: Christian MilNeil <c.neal.milneil@gmail.com>
To: Barbara Barhydt <bab@portlandmaine.gov>
Date: 12/7/2015 3:29 PM
Subject: Support for 101 York Street

Good afternoon,

I'd like to express my support for the proposed redevelopment of 101 York Street with the Planning Board in advance of the Dec. 8 public hearing.

The proposed building will be a positive addition to the neighborhood. In addition to creating 63 new housing units – helping to address one of the city's most pressing needs – the proposed project exemplifies the qualities of good mixed-use urban infill.

I particularly appreciate the project's proposed renovations for York Street. The proposed building's ground-floor retail space, with new street trees, lighting, and generously sized sidewalks, will help attract more foot traffic to this neighborhood. And the proposed bike lanes will help entice more bicyclists to use York Street – the most-used bike route between downtown and the Casco Bay Bridge – potentially alleviating traffic and parking congestion throughout downtown Portland.

My sole concern about the project is the unbalanced proportion of parking spaces (211 of them, each with a ~$20,000 construction cost) to housing units. I hope that the substantial parking garage is there to help replace other surface parking lots in the neighborhood, but at a time when automobiles are our state's biggest and fastest-growing source of greenhouse gases, and our public transit system struggles for lack of funding, a $4 million parking garage feels like a reckless misuse of our resources.

Thanks for your consideration,

Christian MilNeil

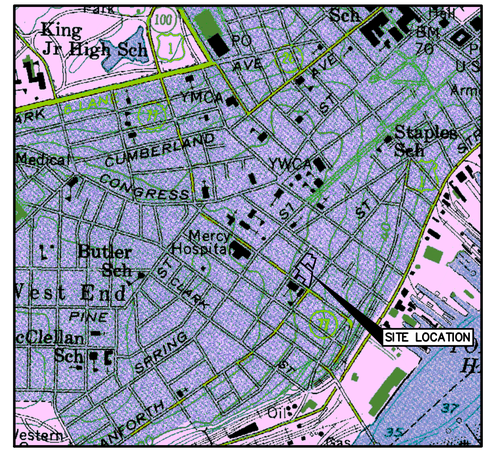
YORK STREET
MIXED USE DEVELOPMENT

YORK STREET
PORTLAND, MAINE

PROJECT PARCEL SITE
PORTLAND ASSESSOR'S MAP & LOT NUMBERS

MAP	LOT
40	21
40	22
40	26

Applicant:
101 YORK ST, LLC
36 DANFORTH ST
PORTLAND, ME 04101



LOCATION MAP
N.T.S.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
▭	BUILDING	▭
	RIGHT OF WAY	
	PROPERTY LINE	
	BUILDING SETBACK	
	ZONE LINE	
	WETLAND BOUNDARY	
	GUIDE RAIL	
	EDGE OF PAVEMENT	
	EDGE OF GRAVEL DRIVE	
100	GRADING CONTOUR LINE	100
X 226.4	SPOT ELEVATION	100.31
	TREELINE	
	TREES & HEDGES	
	POLE WITH LIGHT FIXTURE(S)	
	UTILITY POLE	
	FREESTANDING SIGN	
	PAINTED DIRECTIONAL TRAFFIC ARROW	
OE	OVERHEAD ELECTRIC/TELEPHONE	OHE/T
UE	UNDERGROUND ELECTRIC/TELEPHONE	UGE/T
W	WATER LINE	8"W
D	STORM DRAIN LINE	8"SD
	CULVERT	8"CULVERT
	HYDRANT	
WV	WATER GATE VALVE	
	WATER SHUT OFF VALVE	
	MANHOLE	
	CATCH BASIN	
	TEST PIT	
	IRON ROD (SET)	
	IRON ROD (FOUND)	
	MONUMENT	
	RIPRAP	
	SILT FENCE – PERIMETER	
	STONE SEDIMENT BARRIER	
x	FENCE	

GENERAL NOTES

1. TOPOGRAPHIC DATA AND EXISTING CONDITIONS WAS PREPARED BY OWEN HASKELL.
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
3. MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE OWNER AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTIONS OF THE OWNER, THE CITY OF PORTLAND OR THEIR REPRESENTATIVES AT NO ADDITIONAL COST TO THE OWNER.
4. ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.
5. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, AND/OR CITY OF PORTLAND SPECIFICATIONS.

PERMITTING NOTES

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF A SITE PLAN APPROVAL FROM THE CITY OF PORTLAND. THE CONSTRUCTION WILL BE GOVERNED BY THE CITY OF PORTLAND ZONING ORDINANCE WHICH IS AVAILABLE FOR VIEWING AT THE OFFICE OF THE ENGINEER OR THE MUNICIPAL OFFICE.
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.

LAYOUT NOTES

1. ALL DIMENSIONING, UNLESS NOTED OTHERWISE, IS TO THE FACE OF CURB.
2. OFFSETS TO CATCH BASINS AND MANHOLES ARE TO THE CENTER OF THE FRAME.
3. PIPE LENGTH EQUALS THE CENTER TO CENTER DISTANCES BETWEEN CATCH BASINS AND/OR MANHOLES MINUS ONE-HALF OF THE DIAMETER OF EACH CATCH BASIN OR MANHOLE.
4. PROPERTY LINE AND R.O.W. MONUMENTS SHALL NOT BE DISTURBED BY CONSTRUCTION. IF DISTURBED, THEY SHALL BE RESET TO THEIR ORIGINAL LOCATIONS AT THE CONTRACTOR'S EXPENSE, BY A MAINE LICENSED LAND SURVEYOR.
5. PROPOSED RIGHT OF WAY MONUMENTS AND PROPERTY LINE PINS SHALL BE INSTALLED UNDER THE DIRECTION OF A MAINE LICENSED LAND SURVEYOR.
6. CURB RADII UNLESS OTHERWISE NOTED ON THE PLAN SHALL BE A MINIMUM OF 3'.

UTILITY NOTES

1. ALL WATER UTILITY MATERIALS AND INSTALLATION METHODS SHALL CONFORM TO PORTLAND WATER DISTRICT STANDARDS. ALL WATER DISTRIBUTION PIPING SHALL BE CLASS 52 DUCTILE IRON PIPE, DOUBLE CEMENT LINED AND BITUMINOUS COATED CONFORMING TO AWWA/ANSI C104/A21.4. DISINFECTION OF WATER LINES SHALL CONFORM TO AWWA STANDARD C651, LATEST REVISION.
2. THE LOCATION OF THE PROPOSED UNDERGROUND ELECTRICAL SERVICE IS APPROXIMATE AND THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION WITH CENTRAL MAINE POWER COMPANY.
3. THRUST BLOCKS OR LOCKING RETAINER GLANDS SHALL BE PLACED ON THE WATER DISTRIBUTION LINES AT ALL BENDS, TEES, VALVES, CHANGES IN DIRECTION, ETC. THE THRUST BLOCKS OR LOCKING RETAINER GLANDS SHALL MEET THE REQUIREMENTS OF THE PORTLAND WATER DISTRICT STANDARDS.
4. TEST PITS AT ALL UTILITY CROSSINGS SHALL BE COMPLETED TWO WEEKS IN ADVANCE OF THE START OF CONSTRUCTION OR ORDERING OF MATERIALS. TEST PIT INFORMATION SHALL BE PROMPTLY PROVIDED TO ENGINEER FOR REVIEW.

GRADING AND DRAINAGE NOTES

1. UNLESS OTHERWISE NOTED, ALL STORM DRAIN PIPE SHALL BE IN ACCORDANCE WITH MDOT SPECIFICATIONS SECTION 603-- PIPE CULVERTS AND STORM DRAINS, LATEST REVISION WITH THE EXCEPTION THAT THE ONLY ACCEPTABLE TYPES OF PIPE ARE AS FOLLOWS:

   REINFORCED CONCRETE PIPE, CLASS III
   POLYVINYL-CHLORIDE (PVC) PIPE
   SMOOTH BORE POLYETHYLENE - ADS OR HANCOR

2. TOPSOIL STRIPPED IN AREAS OF CONSTRUCTION THAT IS SUITABLE FOR REUSE AS LOAM SHALL BE STOCKPILED ON SITE AT A LOCATION TO BE DESIGNATED BY THE OWNER. UNSUITABLE SOIL SHALL BE SEPARATED, REMOVED AND DISPOSED OF AT AN APPROVED DISPOSAL LOCATION OFF SITE.
3. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY. NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.

EROSION CONTROL NOTES

1. LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE SITE.
2. PRIOR TO BEGINNING ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL THE PERIMETER SILT FENCES AND THE CONSTRUCTION ENTRANCE.
3. ALL GROUND AREAS DISTURBED FOR CONSTRUCTION WILL BE GRADED, LOAMED AND SEEDED AS SOON AS POSSIBLE. PERMANENT SEED MIXTURE SHALL CONFORM TO THE SEEDING PLAN CONTAINED IN THE EROSION CONTROL NOTES INCLUDED ON SHEET C405.
4. PRIOR TO PAVING, THE CONTRACTOR SHALL FLUSH SEDIMENT FROM ALL STORM DRAIN LINES, REMOVE ACCUMULATED SEDIMENT FROM SUMPS AND INVERTS AND PROPERLY DISPOSE OF.
5. ALL CATCH BASINS WITH OUTLET PIPES 18" DIAMETER OR LESS SHALL BE PROVIDED WITH A "SNOUT" SEDIMENTATION HOOD PER DETAIL.
6. SILT FENCES SHALL BE INSPECTED, REPAIRED AND CLEANED AS NOTED IN THE EROSION CONTROL NOTES.
7. THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCE AS IT BECOMES SATURATED WITH MUD TO ENSURE THAT IT WORKS AS PLANNED DURING CONSTRUCTION.
8. SILT REMOVED FROM AROUND INLETS AND BEHIND THE SILT FENCES SHALL BE PLACED ON A TOPSOIL STOCKPILE AND MIXED INTO IT FOR LATER USE IN LANDSCAPING OPERATIONS.
9. EROSION CONTROL NOTES ACCOMPANY THIS PLAN SET AND ARE CONTAINED ON DRAWING C405 OF THIS PLAN SET.
10. THE MAINTENANCE SCHEDULE FOR THE CATCH BASIN SEDIMENT SUMPS IS CONTAINED IN THE EROSION CONTROL NOTES INCLUDED ON SHEET C405.
11. THE CONTRACTOR IS CAUTIONED THAT FAILURE TO COMPLY WITH THE SEQUENCE OF CONSTRUCTION, EROSION/SEDIMENT CONTROL PLAN, AND OTHER PERMIT REQUIREMENTS BASED UPON ANY THIRD PARTY REVIEW (ie MDEP) MAY RESULT IN MONETARY PENALTIES. THE CONTRACTOR SHALL BE ASSESSED ALL SUCH PENALTIES AT NO COST TO THE OWNER OR PERMITTEE.
12. ALL NON-PAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE LOAMED AND SEEDED, UNLESS OTHERWISE DIRECTED BY THE OWNER.
13. ALL DISTURBED AREAS ARE TO RECEIVE A MINIMUM OF 4" OF TOPSOIL PRIOR TO PERMANENT SEEDING.

UTILITIES

WATER:
PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PORTLAND, MAINE 04102
(207) 761-8300
CONTACT: GLISSEN HAVU

SEWER:
DEPARTMENT OF PUBLIC SERVICES
55 PORTLAND STREET
PORTLAND, MAINE 04101-2991
(207) 874-8832
CONTACT: FRANK BRANCELY

ELECTRIC:
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
(207) 828-2882
CONTACT: JAMES COUGH

TELEPHONE:
VERIZON
5 DAVIS FARM ROAD
PORTLAND, MAINE 04103
(207) 797-1842
CONTACT: TROY MACDONALD

CABLE:
TIME WARNER CABLE
118 JOHNSON ROAD
PORTLAND, MAINE 04102
(207) 253-2222

CALL BEFORE YOU DIG
1-888-344-7233

PERMITS

TYPE OF PERMIT	GOVERNING BODY	STATUS
LEVEL 3 SITE PLAN REVIEW	CITY OF PORTLAND PLANNING DEPARTMENT 389 CONGRESS STREET PORTLAND, MAINE 04101 (207) 874-8719	SUBMITTED: 8/11/2015

INDEX

C0	COVER SHEET, GENERAL NOTES, & LEGEND
C1.01*	ALTA SURVEY PLAN
C1.02*	NEW DIVISION OF LOTS
C1.03	SUBDIVISION PLAN
C2.01	DEMOLITION PLAN
C3.01	OVERALL SITE AND UTILITY PLAN
C3.02	SITE AND UTILITY PLAN
C4.01	GRADING, DRAINAGE, AND EROSION CONTROL PLAN
C5.01	DETAILS 1
C5.02	DETAILS 2
C5.03	BIORETENTION CELL PLAN AND DETAILS
C6.01	EROSION CONTROL NOTES
C7.01*	HARDSCAPE PLAN & DETAILS
C7.02*	HARDSCAPE PLAN & DETAILS
C7.03*	LANDSCAPE PLAN – COMMERCIAL
C7.04*	LANDSCAPE PLAN – RESIDENTIAL
C8.01*	LIGHTING & PHOTOMETRICS PLAN
C8.02*	LIGHTING SPECIFICATIONS
C9.01*	BUILDING ELEVATIONS
C9.02*	BUILDING SECTION & ROOF PLAN
C9.03*	LOWER LEVEL FLOOR PLAN
C9.04*	SECOND LEVEL FLOOR PLAN
C9.05*	UPPER LEVEL FLOOR PLAN
C10.01*	CONSTRUCTION MANAGEMENT

* DENOTES PLANS PROVIDED BY OTHERS:
  -OPECHEE CONSTRUCTION CORPORATION
  -OWEN HASKELL INC.
  -ELM GROVE PROPERTY SOLUTIONS, LLC

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE – ALTON M. PALMER III – No. 0231 – LICENSED PROFESSIONAL ENGINEER
11/13/15

C:\CAD WORKING\3018 - York Street\dwg\3018-COVER.dwg 11/17/2015 11:44 AM

Rev.	Date	Revision
1	11/13/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

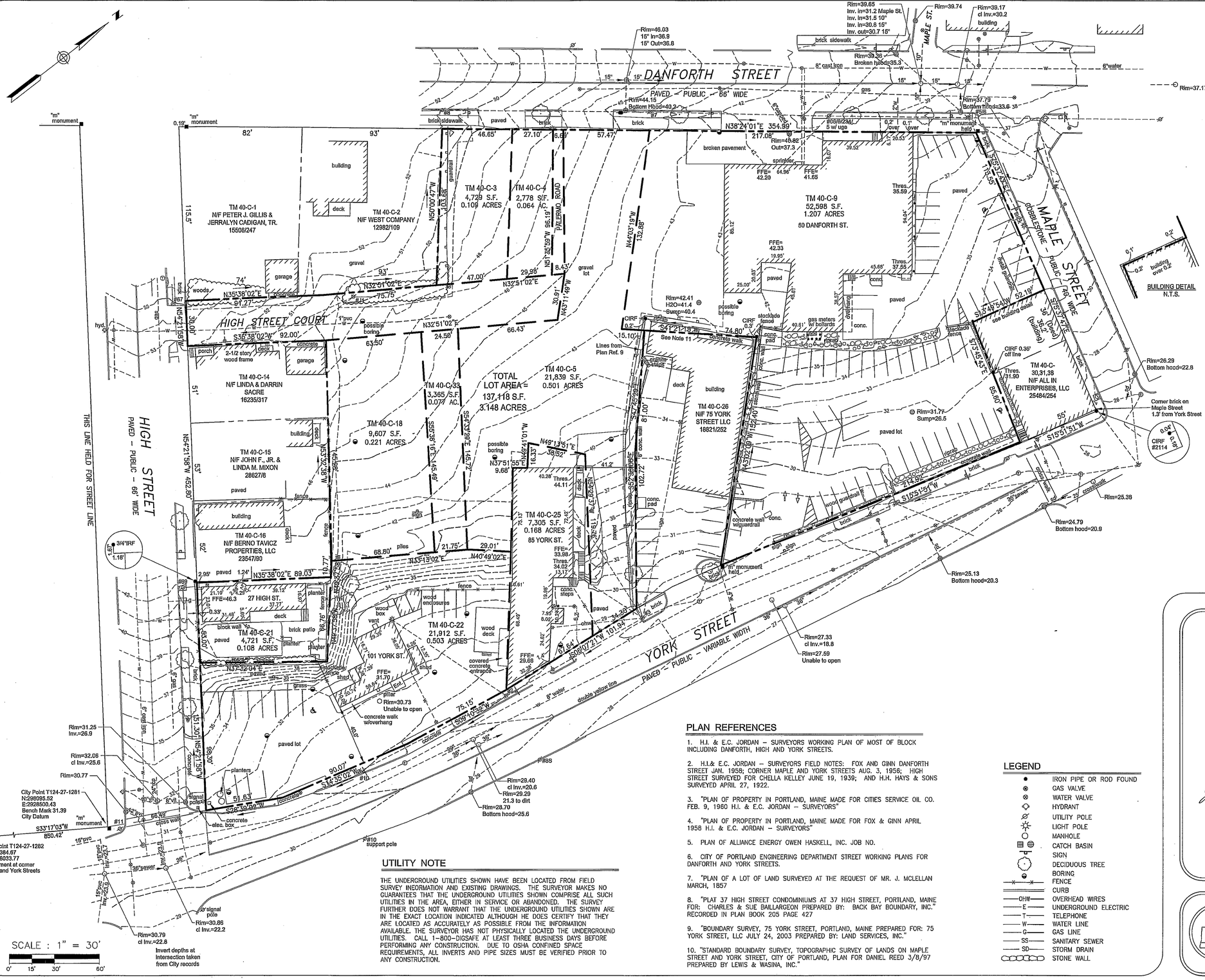
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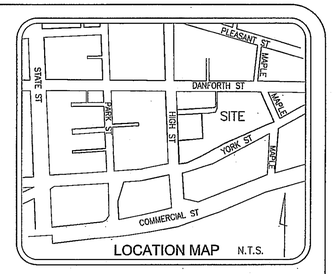
This plan shall not be modified without written permission from Gorrill-Palmer Consulting Engineers, Inc.(GPCEI). Any alterations, authorized or otherwise, shall be at the user's sole risk and without liability to GPCEI.

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www.gorrillpalmer.com
207.657.6910

Drawing Name: Cover Sheet
Project: York Street – Mixed Use Development
Portland, Maine
Client: York Street, LLC
36 Danforth Street, Portland, ME 04101

Drawing No. C0





LOCATION MAP N.T.S.

NOTES

1. OWNERS OF RECORD, TAX MAP AND LOT, DEED BOOK/PAGE:

J.B.BROWN & SONS	40-C-3,4	4842/336
	40-C-5,9	4156/65
	40-C-18	24531/339
	40-C-25	27156/179
	40-C-33	24127/341
THOMAS L. MCGINNIS	40-C-21	24372/292
HARBORVIEW, LLC	40-C-22	26143/287

2. BEARINGS ARE GRID NORTH AND ELEVATIONS ARE CITY DATUM AS BASED ON MONUMENT AT INTERSECTION OF SOUTHWEST LINE OF HIGH STREET AND NORTHWEST SIDE OF YORK STREET AND MONUMENT AT INTERSECTION OF SOUTHWEST LINE OF STATE STREET AND NORTHWEST LINE OF YORK STREET.

3. STREET LINES OF HIGH STREET, DANFORTH STREET AND MAPLE STREET ARE BASED ON MONUMENTS FOUND AS SHOWN AND TIES OFF BUILDING AT MAPLE AND YORK AS SHOWN ON CITY ENGINEERING PLANS. STREET LINE OF YORK STREET BASED ON SURVEYS BY H.I. & E.C. JORDAN – SURVEYORS.

4. LINES OF LOTS 1 AND 2 AND HIGH STREET COURT BASED ON PLAN REFERENCE ONE.

5. THE REAR LINE OF LOTS 14, 15, AND 16 BASED ON PLAN REFERENCE ONE AND TWO.

6. THE LINES OF LOT 26 BASED ON FIELD NOTES FROM JORDAN SURVEY FOR FOX AND GINN IN JANUARY 1958.

7. STATUS OF AND RIGHTS OF OTHERS IN HIGH STREET COURT NOT KNOWN. STATUS OF AND RIGHTS OF OTHERS IN PALERMO ROAD, AS SHOWN ON TAX MAP, NOT SHOWN.

8. THE BUILDING ON LOT 38 ENCROACHES OVER THE PROPERTY LINES. PLAN REFERENCE 10 SHOWS LINES DIFFERENTLY. THE DEED TO LOT 38 CALLS FOR THE LINE TO BE 36 FEET FROM THE ORIGINAL BUILDING AT THE CORNER OF STREETS. BUILDING ADDITION IS 36.2 LONG. PROPERTY LINE OF 85.6 FEET TAKEN FROM 1956 FIELD NOTES IN PLAN REFERENCE 2.

9. LOCUS FALLS IN FLOOD ZONE C, AREAS OF MINIMAL FLOODING, ON FLOOD INSURANCE RATE MAP 230051–0013B EFFECTIVE DATE JULY 17, 1986.

10. THIS SURVEY WAS PERFORMED WITHOUT BENEFIT OF A CURRENT TITLE COMMITMENT.

11. PLAN REFERENCE 4 SHOWS LINES THAT DO NOT MATCH DEED, REFERENCES AN AGREEMENT WITH J.B. BROWN & SONS, AND REFERENCES AN EXCHANGE OF DEEDS. NO AGREEMENT DEEDS WERE FOUND.

12. INTERIOR LINES CREATED FROM DEED DIMENSIONS OF OLD PLANS AND FIELD BOOKS OF H.I. & E.C. JORDAN COMPANY. SOME ABUTTING DEEDS DO NOT MATCH BY DIMENSION. SOME LINES ARE MISSING ANGLES AND/OR DISTANCES.

PLAN REFERENCES

1. H.I. & E.C. JORDAN – SURVEYORS WORKING PLAN OF MOST OF BLOCK INCLUDING DANFORTH, HIGH AND YORK STREETS.

2. H.I.& E.C. JORDAN – SURVEYORS FIELD NOTES: FOX AND GINN DANFORTH STREET JAN. 1958; CORNER MAPLE AND YORK STREETS AUG. 3, 1956; HIGH STREET SURVEYED FOR CHELLA KELLEY JUNE 19, 1939; AND H.H. HAYS & SONS SURVEYED APRIL 27, 1922.

3. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR CITIES SERVICE OIL CO. FEB. 9, 1960 H.I. & E.C. JORDAN – SURVEYORS"

4. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR FOX & GINN APRIL 1958 H.I. & E.C. JORDAN – SURVEYORS"

5. PLAN OF ALLIANCE ENERGY OWEN HASKELL, INC. JOB NO.

6. CITY OF PORTLAND ENGINEERING DEPARTMENT STREET WORKING PLANS FOR DANFORTH AND YORK STREETS.

7. "PLAN OF A LOT OF LAND SURVEYED AT THE REQUEST OF MR. J. MCLELLAN MARCH, 1857

8. "PLAT 37 HIGH STREET CONDOMINIUMS AT 37 HIGH STREET, PORTLAND, MAINE FOR: CHARLES & SUE BAILLARGEON PREPARED BY: BACK BAY BOUNDARY, INC." RECORDED IN PLAN BOOK 205 PAGE 427

9. "BOUNDARY SURVEY, 75 YORK STREET, PORTLAND, MAINE PREPARED FOR: 75 YORK STREET, LLC JULY 24, 2003 PREPARED BY: LAND SERVICES, INC."

10. "STANDARD BOUNDARY SURVEY, TOPOGRAPHIC SURVEY OF LANDS ON MAPLE STREET AND YORK STREET, CITY OF PORTLAND, PLAN FOR DANIEL REED 3/8/97 PREPARED BY LEWIS & WASINA, INC."

UTILITY NOTE

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEY 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 THE INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1–800–DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

LEGEND

- IRON PIPE OR ROD FOUND
- GAS VALVE
- WATER VALVE
- HYDRANT
- UTILITY POLE
- LIGHT POLE
- MANHOLE
- CATCH BASIN
- SIGN
- DECIDUOUS TREE
- BORING
- FENCE
- CURB
- OHW — OVERHEAD WIRES
- E — UNDERGROUND ELECTRIC
- T — TELEPHONE
- W — WATER LINE
- G — GAS LINE
- SS — SANITARY SEWER
- SD — STORM DRAIN
- STONE WALL

BUILDING DETAIL N.T.S.

ALTA/ACSM Land Title Survey

on

High, Danforth, Maple & York Streets
Portland, Cumberland County, Maine
made for
J.B. Brown & Sons

Surveyor's Certification

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS. THE FIELD WORK WAS COMPLETED ON DECEMBER 2, 2013.

JOHN C. SCHWANDA
PROFESSIONAL LAND SURVEYOR NO. 1252
IN THE STATE OF MAINE

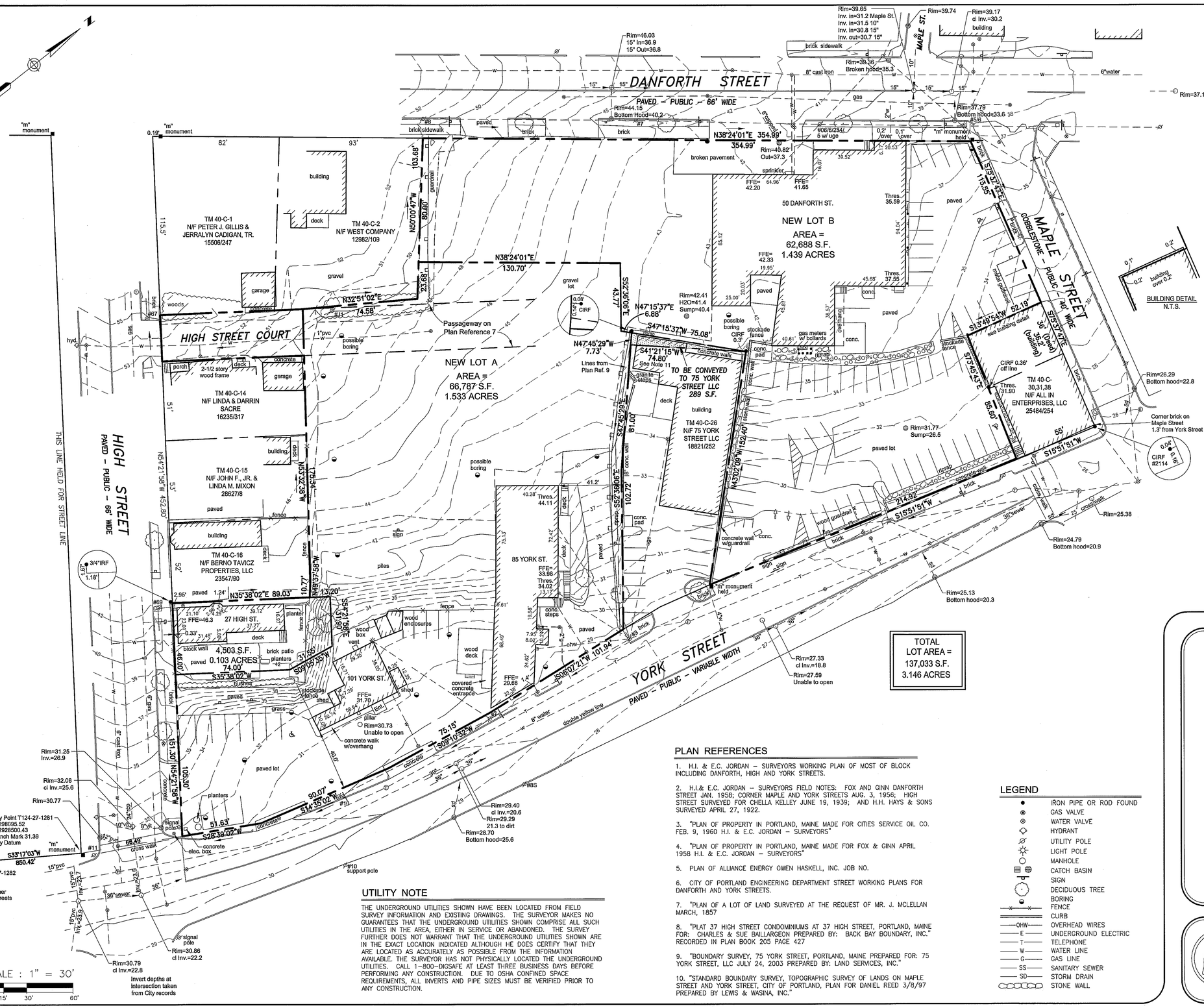
DATE OF PLAN: DECEMBER 3, 2013

REVISION DATE: JUNE 9, 2015
(ADD INTERIOR LOT LINES WITH DIMENSIONS & AREAS; NOTE 12)

STATE OF MAINE · JOHN C. SCHWANDA · NO. 1252 · PROFESSIONAL LAND SURVEYOR

OHI JOB NO. 2013–194P/2015–125P

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 U.S. Route One, Unit #10
Falmouth, Maine 04105
Tel. (207)774–0424 Fax (207)774–0511
www.owenhaskell.com


DANFORTH STREET
PAVED – PUBLIC – 66' WIDE
HIGH STREET COURT
PAVED – PUBLIC – 66' WIDE
MAPLE STREET
PAVED – PUBLIC – 40' WIDE
YORK STREET
PAVED – PUBLIC – VARIABLE WIDTH
50 DANFORTH ST.
NEW LOT B
AREA =
62,688 S.F.
1.439 ACRES
NEW LOT A
AREA =
66,787 S.F.
1.533 ACRES
TO BE CONVEYED TO 75 YORK STREET LLC 289 S.F.
TOTAL LOT AREA = 137,033 S.F. 3.146 ACRES
TM 40-C-1 N/F PETER J. GILLIS & JERRALYN CADIGAN, TR. 15506/247
TM 40-C-2 N/F WEST COMPANY 12982/109
TM 40-C-14 N/F LINDA & DARRIN SACRE 16235/317
TM 40-C-15 N/F JOHN F., JR. & LINDA M. MIXON 28627/8
TM 40-C-16 N/F BERNO TAVICZ PROPERTIES, LLC 23547/90
TM 40-C-26 N/F 75 YORK STREET LLC 18821/252
TM 40-C-30,31,38 N/F ALL IN ENTERPRISES, LLC 25484/254
27 HIGH ST.
85 YORK ST.
101 YORK ST.
4,503 S.F. 0.103 ACRES
THIS LINE HELD FOR STREET LINE
N38°24'01"E 354.99'
S35°38'02"W 74.00'
N32°51'02"E 74.58'
N38°24'01"E 130.70'
S52°36'06"E 43.77'
N47°15'37"E 6.88'
S47°15'37"W 75.08'
N47°45'29"W 7.73'
S41°21'15"W 74.80'
S42°48'59"E 81.00'
N43°02'09"W 132.40'
S15°51'51"W 214.92'
S74°08'09"W 135.55'
S15°51'51"W 85.80'
S13°49'54"W 62.19'
S75°51'47"E 36.00'
S73°45'45"E
N54°21'58"W 452.80'
N53°32'38"W 175.34'
N43°37'58"W 10.77'
N35°38'02"E 89.03'
S54°13'58"E 13.20'
S09°05'35"W 31.95'
S06°07'21"W 101.94'
S09°10'32"W 75.15'
S14°35'02"W 90.07'
S28°39'02"W 51.63'
S33°17'03"W 850.42'
N54°21'58"W 105.30'
N52°21'58"W 151.30'
N50°00'47"W 80.60'
S35°38'02"W 74.00'
S09°05'35"W 31.95'
S54°13'58"E 13.20'
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S74°08'09"W 135.55'
S15°51'51"W 214.92'
S15°51'51"W 85.80'
S13°49'54"W 62.19'
S75°51'47"E 36.00'
S73°45'45"E
N43°02'09"W 132.40'
S42°48'59"E 81.00'
S41°21'15"W 74.80'
N47°15'37"E 6.88'
S47°15'37"W 75.08'
S52°36'06"E 43.77'
N47°45'29"W 7.73'
N38°24'01"E 354.99'
N38°24'01"E 130.70'
N32°51'02"E 74.58'
N50°00'47"W 80.60'
N54°21'58"W 452.80'
N53°32'38"W 175.34'
N43°37'58"W 10.77'
N35°38'02"E 89.03'
S54°13'58"E 13.20'
S09°05'35"W 31.95'
S06°07'21"W 101.94'
S09°10'32"W 75.15'
S14°35'02"W 90.07'
S28°39'02"W 51.63'
S33°17'03"W 850.42'
N54°21'58"W 105.30'
N52°21'58"W 151.30'
N50°00'47"W 80.60'
S35°38'02"W 74.00'
S09°05'35"W 31.95'
S54°13'58"E 13.20'
N35°38'02"E 89.03'
N43°37'58"W 10.77'
N53°32'38"W 175.34'
N54°21'58"W 452.80'
S33°17'03"W 850.42'
N52°21'58"W 105

HIGH STREET

YORK STREET

HIGH STREET COURT

NORTH STREET

GRANITE MONUMENT TO BE SET (SEE DETAIL ON SHEET C1.04)

N: 298153.87
E: 2928532.31

GRANITE MONUMENT TO BE SET ON A 3' FOOT OFFSET LINE (SEE DETAIL ON SHEET C1.04)

N54°21'58"W 105.30'

S35°38'02"W 19.50'

S35°38'02"W 74.00'

S54°21'58"E 31.90'

S35°38'02"W 31.55'

N49°37'58"W 10.77'

N53°32'38"W 175.34'

S54°21'58"E 80.07'

GRANITE MONUMENT TO BE SET (SEE DETAIL ON SHEET C1.04)

PROPOSED MIXED-USED BUILDING

PERIMETER OF J.B. BROWN AND SONS CONDOMINIUM BUILDING TO BE CONSTRUCTED

S36°10'32"W 152.6'

S36°07'21"W 37.94'

N23°51'02"E 74.58'

N50° 00' 47"W 23.68'

ACCESS EASEMENT TO WEST COMPANY

N38° 24' 01"E 130.70'

PROPERTY CORNERS TO SET (TYP.)

S52°36'06"E 102.72'

S47°45'29"E 81.00'

S52° 36' 06"E 43.77'

N47°15'37"E 6.88'

N: 298461.89
E: 2928602.60

GRANITE MONUMENT TO BE SET ON A 3' FOOT OFFSET LINE (SEE DETAIL ON SHEET C1.04)

NEW LOT A
AREA =
66,787 S.F.
1.533 ACRES

PLAN DEPICTS LEVEL 1 PARKING ONLY. PARKING PROVIDED IS IN EXCESS OF REQUIRED NUMBER OF SPACES

27 HIGH ST.
4,503 S.F.
0.103 ACRES

TM 40-C-16
N/F BERNO TAVICZ PROPERTIES, LLC
23547/90

TM 40-C-15
N/F JOHN F., JR. & LINDA M. MIXON
28627/8

TM 40-C-14
N/F LINDA & DARRIN SACRE
16235/317

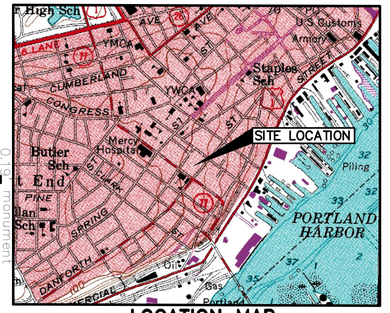
TM 40-C-1
N/F PETER J. GILLIS & JERRALYN CADIGAN, TR.
15506/247

TM 40-C-2
N/F WEST COMPANY
12982/109

TM 40-C-26
N/F 75 YORK STREET LLC
18821/252

MATCHLINE

MATCHLINE



LOCATION MAP
N.T.S.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE	
	MONUMENT	
	CURB	
	TREELINE	
	TREES & HEDGES	
	BUILDING	
	EDGE OF PAVEMENT	

APPROVAL BY:
CITY OF PORTLAND PLANNING BOARD

DATE: _____

1 inch = 20 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

Rev.	Date	Revision
1	11/13/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

Design: DER	Draft: CG	Date: JUNE 2015
Checked: AMP	Scale: 1"=20'	Job No.: 3018
File Name: 3018-SUBDIVISION.dwg		

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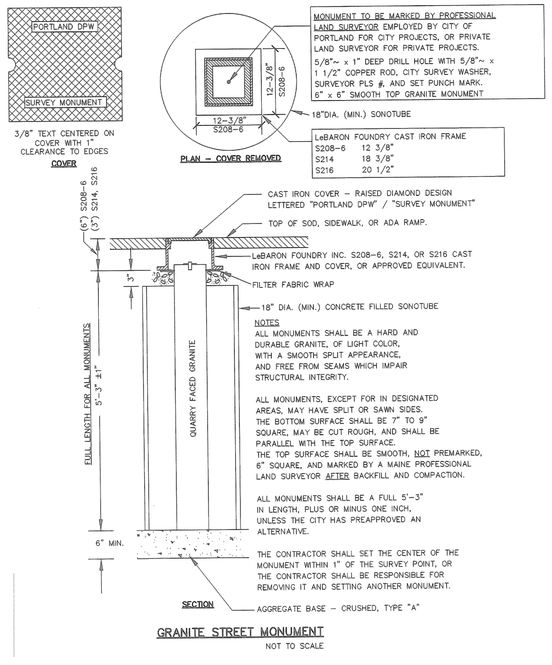
Drawing Name: Subdivision Plan

Project: York Street - Mixed Use Development
Portland, Maine

Client: York Street, LLC
36 Danforth Street, Portland, ME 04101

Drawing No. C1.03

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GRANITE STREET MONUMENT

NOT TO SCALE

1. CONSTRUCTION:
   a. METHODS AND MATERIALS USED IN CONSTRUCTION OF IMPROVEMENTS WITHIN THE CITY RIGHT OF WAY SHALL CONFORM TO CURRENT CITY OF PORTLAND TECHNICAL AND DESIGN STANDARDS AND SPECIFICIATIONS AND/OR CURRENT M.D.O.T. STANDARDS AND SPECIFICATIONS.
   b. ALL CURBING SHALL BE DESIGNED AND BUILT WITH TIP–DOWNS AT ALL DRIVEWAYS AND CROSSWALKS, IN ACCORDANCE WITH CITY OF PORTLAND PUBLIC SERVICES DIVISION TECHNICAL STANDARDS AND GUIDELINES. FINAL AS–BUILT LOCATIONS OF CURBING AND TIP DOWNS SHALL BE COORDINATED WITH PUBLIC SERVICES DIVISION. ALL WATER MAINS, SERVICES AND ASSOCIATED APPURTENANCE SHALL BE IN CONFORMANCE WITH PORTLAND WATER DISTRICT STANDARDS. ALL NATURAL GAS MAINS, SERVICES AND ASSOCIATED APPURTENANCES SHALL BE IN CONFORMANCE WITH UNITIL STANDARDS.
   c. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES" PUBLISHED BY THE CUMBERLAND COUNTY SOIL AND WATER DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. CONTRACTOR SHALL POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
   d. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. APPLICANT, OR AN AUTHORIZED AGENT, MUST BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.
   e. WARNING SIGNS, MARKERS, BARRICADES OR FLAGMEN, APPROPRIATE FOR THE TYPE OF CONSTRUCTION, MUST BE EMPLOYED TO REGULATE TRAFFIC.
   f. CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED AND DISPOSED OF IN ACCORDANCE WITH CITY OF PORTLAND'S SOLID WASTE ORDINANCE CHAPTER 12.
   g. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE DEVELOPER/CONTRACTOR AT THEIR EXPENSE.
   h. PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERTY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO INSURE THEIR INTEGRITY. IF DISTURBED THEY SHALL BE REPLACED BY A SURVEYOR REGISTERED IN THE STATE OF MAINE AT THE CONTRACTOR/DEVELOPER'S EXPENSE.
   i. ALL SANITARY SERVICES AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF PORTLAND PUBLIC SERVICES DEPARTMENT SEWER DIVISION.
   j. ALL NEW CONNECTIONS, RECONNNECTIONS, ETC. TO SANITARY OR STORM SEWERS SHALL REQUIRE A CONNECTION PERMIT PRIOR TO BEGINNING ANY WORK. THE CITY OF PORTLAND PUBLIC SERVICES DEPARTMENT MUST BE NOTIFIED AT LEAST 24 HOURS PRIOR TO COMMENCEMENT TO ALLOW FOR INSPECTION.
   k. A PERMIT MUST BE OBTAINED FROM THE CITY OF PORTLAND PUBLIC SERVICES DEPARTMENT PRIOR TO BEGINNING ANY WORK WITHIN THE CITY RIGHT–OF–WAY.
   l. THE ENTIRE SITE SHALL BE DEVELOPED AND/OR MAINTAINED AS DEPICTED ON THE SITE PLAN. APPROVAL OF THE PLANNING AUTHORITY OR PLANNING BOARD SHALL BE REQUIRED FOR ANY ALTERATIONS TO OR DEVIATIONS FROM THE APPROVED SITE PLAN, INCLUDING, WITHOUT LIMITATION, TOPOGRAPHY, DRAINAGE, LANDSCAPING, RETENTION OF WOODED OR LAWN AREAS, ACCESS, SIZE, LOCATION AND SURFACING OF PARKING AREAS, AND LOCATIONS AND SIZE OF BUILDINGS.
   m. LANDSCAPING SHALL MEET THE CITY OF PORTLAND TECHNICAL MANUAL, INCLUDING STREET TREES TO BE INSTALLED IN THE CITY RIGHT–OF–WAY AS SHOWN ON THE LANDSCAPING PLAN. STREET TREES SHALL BE A SPECIES IDENTIFIED ON THE CITY OF PORTLAND RECOMMENDED TREE LIST, UNLESS OTHERWISE APPROVED BY THE PORTLAND CITY ARBORIST OR HIS/HER DESIGNEE.
   n. ALL DISTURBED AREA ON THE STIE NOT COVERED BY BUILDINGS OR PAVED AREA SHALL BE STABILIZED WITH LOAM AND SEED OR OTHER MATERIALS AS REQUIRED BY BEST MANAGEMENT PRACTICES.
   o. THE CONTRACTOR OR APPLICANT IS REQUIRED TO NOTIFY THE CITY OF PORTLAND PUBLIC SERVICES INSPECTION DIVISION IN WRITING THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. PRIOR TO CONSTRUCTION, A PRECONSTRUCTION MEETING SHALL BE HELD AT THE PROJECT SITE WITH THE CONTRACTOR, DEVELOPMENT REVIEW COORDINATOR, PUBLIC WORKS REPRESENTATIVE AND OWNER TO REVIEW THE CONSTRUCTION SCHEDULE AND CRITICAL ASPECTS OF THE SITE WORK. AT THAT TIME, THE SITE/BUILDING CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF A DETAILED CONSTRUCTION SCHEDULE AT ATTENDING CITY REPRESENTATIVE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE A MUTUALLY AGREEABLE TIME FOR PRECONSTRUCTION MEETING.

GENERAL NOTES:

1. THIS IS THE SUBDIVISION PLAT FOR THE CREATION OF UP TO 63 DWELLING UNITS IN A NEW MIXED–USE CONDOMINIUM BUILDING TO BE CONSTRUCTED ON THE SUBJECT PROPERTY. THE APPROVAL OF THIS PLAT DOES NOT CREATE ANY SUBDIVISION OF THE LAND ON THE SUBJECT PROPERTY.
2. APPLICANT INTENDS TO DEVELOP SUBJECT PROPERTY AS A CONDOMINIUM NAMED "YORK STREET MIXED–USE DEVELOPMENT" CONSISTING OF UP TO 63 RESIDENTIAL UNITS THAT ARE SUBJECT TO SUBDIVISION REGULATION, PLUS RETAIL AND RESTAURANT.
3. THE SIGNATURES OF THE CITY OF PORTLAND PLANNING BOARD ON THIS SUBDIVISION PLAT CONSTITUTE SUBDIVISION APPROVAL FOR THE CREATION OF 63 RESIDENTIAL UNITS. THE NON–RESIDENTIAL UNITS ARE NOT SUBJECT TO SUBDIVISION REGULATION.
4. THE RECORD OWNER OF THE SUBJECT PROPERTY IS THE APPLICANT, J.B. BROWN & SONS. DEEDS GRANTING THE SUBJECT PROPERTY TO THE APPLICANT ARE THE FOLLOWING: A DEED FROM XX
5. SUBJECT PROPERTY CONSISTS OF PARTIAL LOTS 21, 22 AND 26 ON THE CITY OF PORTLAND TAX MAP 40.
6. TOTAL LAND AREA OF SUBJECT PROPERTY IS APPROXIMATELY 66,787 SQ FT.
7. LAND BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON AN ON–THE–GROUND SURVEY TITLED "NEW DIVISION OF LOTS ON HIGH, DANFORTH, MAPLE & YORK STREETS, PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR J.B. BROWN & SONS" BY OWEN HASKELL, INC. DATED DECEMBER 3, 2013 AND REVISED OCTOBER 28, 2015.
8. ZONING DISTRICT: SUBJECT PROPERTY IS LOCATED IN THE B–3 DOWNTOWN BUSINESS DISTRICT. SPACE AND BULK CRITERIA FOR THE B–3 DOWNTOWN BUSINESS DISTRICT ARE AS FOLLOWS:
   a. MIN. LOT SIZE: NONE
   b. MIN. STREET FRONTAGE: 15'
   c. MAX FRONT YARD SETBACK: 5' OR LESS
   d. MIN. YARD DIMENSIONS: NONE
   e. MIN. LOT WIDTH: NONE
   f. MAX LOT COVERAGE: 100%
   g. MAX HEIGHT OF BUILDING: 45'
9. THE FOLLOWING IS THE FLOOR SPACE AREA FOR EACH PROPOSED USE:

RESTAURANT:	7,000 S.F.
RETAIL:	9,955 S.F.
RESIDENTIAL:	80,798 S.F.
TOTAL:	97,753 S.F.

10. THE TOTAL NUMBER OF PARKING SPACES REQUIRED FOR THE YORK STREET MIXED–USE DEVELOPMENT IS 124 SPACES. EXCESS PARKING WILL BE PROVIDED ON SITE IN THE PARKING GARAGE.
11. A SUBDIVISION IS DEFINED AS THE DIVISION OF A LOT, TRACT OR PARCEL OF LAND INTO THREE (3) OR MORE LOTS, INCLUDING LOTS OF FORTY (40) ACRES OR MORE, WITHIN ANY FIVE–YEAR PERIOD WHETHER ACCOMPLISHED BY SALE, LEASE, DEVELOPMENT, BUILDINGS OR OTHERWISE AND AS FURTHER DEFINED IN 30–A M.R.S.A. SECTION 4401. THE TERM SUBDIVISION SHALL ALSO INCLUDE THE DIVISION OF A NEW STRUCTURE OR STRUCTURES ON A TRACT OR PARCEL OF LAND INTO THREE (3) OR MORE DWELLING UNITS WITHIN A FIVE–YEAR PERIOD AND THE EXISTING STRUCTURE OR STRUCTURES PREVIOUSLY USED FOR COMMERCIAL OR INDUSTRIAL USE INTO THREE (3) OR MORE DWELLING UNITS WITHIN A FIVE–YEAR PERIOD. THE AREA INCLUDED IN THIS EXPANSION OF AN EXISTING STRUCTURE IS DEEMED TO BE A NEW STRUCTURE FOR THE PURPOSES OF THIS PARAGRAPH. A DWELLING UNIT SHALL INCLUDE ANY PART OF A STRUCTURE WHICH, THROUGH SALE OR LEASE, IS INTENDED FOR HUMAN HABITATION, INCLUDING SINGLE–FAMILY AND MULTI–FAMILY HOUSING CONDOMINIUMS, TIME–SHARE UNITS AND APARTMENTS.
12. THIS IS A PRIVATE CONDOMINIUM. MAINTENANCE AND MANAGEMENT OF SIDEWALKS, STORMWATER DEVICES, SITE LIGHTING, TRASH REMOVAL, AND SNOW REMOVAL SHALL BE THE RESPONSIBILITY OF THE CONDOMINIUM ASSOCIATION.
13. THE CONDOMINIUM ASSOCIATION SHALL BE RESPONSIBLE FOR COMPLYING WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III, POST–CONSTRUCTION STORM WATER MANAGEMENT, WHICH SPECIFIES ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS AT A MINIMUM. IN ADDITION, THE CONDOMINIUM ASSOCIATION SHALL BE RESPONSIBLE FOR COMPLYING WITH THE CONDITIONS OF THE SUBMITTED STORMWATER MANAGEMENT PLANS AND MEET CITY STANDARDS AND STATE GUIDELINES.
14. DURING CONSTRUCTION THE DEVELOPER/CONTRACTOR/SUBCONTRACTOR MUST COMPLY WITH CONDITIONS OF THE SUBMITTED STORMWATER MANAGEMENT PLANS AND MEET CITY STANDARDS AND STATE GUIDELINES.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

8/10/15

Rev.	Date	Revision
1	11/13/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

Design: DER	Draft: CG	Date: JUNE 2015
Checked: AMP	Scale: 1"=20'	Job No.: 3018
File Name: 3018–SUBDIVISION.dwg		

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Drawing Name: Subdivision Notes and Details

Project: **York Street – Mixed Use Development**
Portland, Maine

Client: **York Street, LLC**
36 Danforth Street, Portland, ME 04101

Drawing No. C1.04

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REMOVE GUARDRAIL
REMOVE POLE
1" pvc
REMOVE WATER LINE
CUT AND CAP WATER LINE AT PROPERTY LINE
REMOVE OVERHEAD POWER
REMOVE STAIRS
REMOVE AND DISPOSE OF GUARDRAIL
REMOVE CONCRETE RETAINING WALL
SAWCUT PAVEMENT
DEMOLISH EXISTING BUILDING, FOUNDATION AND APPURTENANCES
REMOVE AND DISPOSE OF ALL PAVEMENT ON-SITE
REMOVE AND DISPOSE OF SIGNS
REMOVE CONCRETE PAD
REMOVE EXISTING UNDERGROUND/OVERHEAD ELECTRICAL SERVICE
REMOVE SIGN
REMOVE TREE
REMOVE POLE. UTILITY HANDHOLD TO BE INSTALLED TO CONNECT EXISTING AND PROPOSED UNDERGROUND SERVICES.
SAWCUT PAVEMENT (TYP.)
REMOVE SIGN
HOUSE TO REMAIN
DECK TO REMAIN
REMOVE PAVEMENT
REMOVE BRICK PATIO
REMOVE BRICK (START HERE)
REMOVE CURB (START HERE)
REMOVE AND DISPOSE OF ALL PAVEMENT ON-SITE
REMOVE TREES
REMOVE AND DISPOSE OF SIGNS
DEMOLISH EXISTING BUILDING, FOUNDATION AND APPURTENANCES
REMOVE EXISTING WATER SERVICE (TYP.)
REMOVE SIGN
EXISTING POLE TO BE REMOVED (TYP.)
REMOVE CURB, SEE NOTE 8 (TYP.)
EXIST. OHE/T/C TO BE REMOVED (TYP.)
EXISTING GUY POLE TO BE REMOVED (TYP.)
Rim=37.79 Bottom hood=33.6
Rim=26.29 Bottom hood=22.8
Rim=31.27 Sump=26.5
Rim=25.38
Rim=24.79 Bottom hood=20.9
Rim=25.13 Bottom hood=20.3
Rim=27.33 cl Inv.=18.8
Rim=27.59 Unable to open
Rim=29.40 cl Inv.=20.6
Rim=29.29 21.3 to dirt
Rim=28.70 Bottom hood=25.6
Rim=32.06 cl Inv.=25.6
Rim=30.79 Inv.=22.8
Rim=30.86 cl Inv.=22.2
Rim=42.41 H20=41.4 Sump=40.4
Rim=44.15 Bottom hood=40.2
FFE= 42.20
FFE= 64.96'
FFE= 41.65
FFE= 42.33
Thres. 35.59
Thres. 37.55
Thres. 31.90
0.04' CIRF #2114
woods
gravel lot
guardrail
fence
planter
deck
brick patio
wood enclosures
wood box
vent
wood deck
covered concrete entrance
shed
stockade fence
paved
grass
pillar Rim=30.73 Unable to open
concrete walk w/overhang
conc. steps
ohw
sign
36" sewer
8" water
gas
#10
#8S

NOTES:

1. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTES SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.
2. CONTRACTOR SHALL COORDINATE WITH CENTRAL MAINE POWER FOR TERMINATION OF ELECTRIC SERVICE FROM EXISTING BUILDINGS.
3. CONTRACTOR SHALL COORDINATE WITH THE PORTLAND WATER DISTRICT FOR THE SHUT OFF OF WATER SERVICE TO THE EXISTING BUILDINGS.
4. CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTLAND FOR TERMINATING THE EXISTING SEWER SERVICE.
5. DEMOLITION SHALL OCCUR SUCH THAT RECYCLING OF WASTE OCCURS TO THE MAXIMUM EXTENT PRACTICABLE; INCLUDING BUT NOT LIMITED TO: STONE, BRICK, CONCRETE, STEEL, WOOD AND PAVEMENT.
6. PRIOR TO DEMOLITION, A CONSTRUCTION MANAGEMENT PLAN PREPARED BY THE GENERAL CONTRACTOR SHALL BE SUBMITTED TO THE CITY OF PORTLAND PLANNING DIVISION FOR REVIEW. THE CONSTRUCTION MANGEMENT PLAN SHALL ADDRESS THE FOLLOWING:
   - ANTICIPATED PROJECT START DATE
   - ANTICIPATED PROJECT END DATE
   - CONSTRUCTION SEQUENCE
   - PEDESTRIAN CIRCULATION PLAN
7. COORDINATE WITH PROPANE SUPPLIER PRIOR TO PROPANE TANK REMOVAL.
8. EXISTING CURBING IN THE RIGHT-OF-WAY IS THE PROPERTY OF THE CITY OF PORTLAND. ANY REMOVED GRANITE CURBING SHALL BE TRANSPORTED TO THE CITY STOCKYARD ON OUTER CONGRESS STREET.

25 0 12.5 25 50
1 inch = 25 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE ALTON M. PALMER III No. 6231 REGISTERED PROFESSIONAL ENGINEER
11/13/15

Rev.	Date	Revision
1	11/13/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

Design: CEH | Draft: CG | Date: JUNE 2015
Checked: AMP | Scale: 1"=25' | Job No.: 3018
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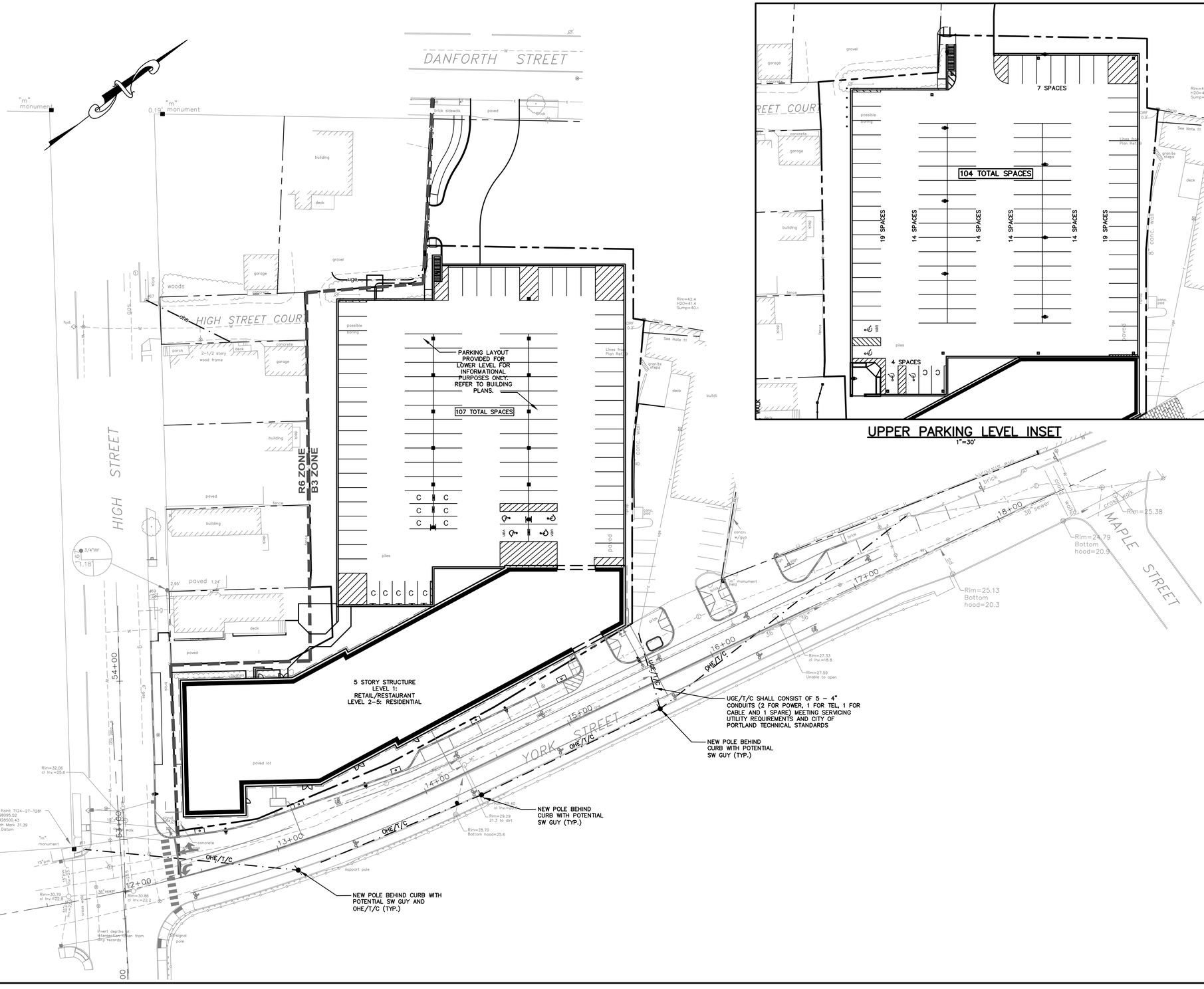
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Drawing Name: Demolition Plan
Project: York Street – Mixed Use Development, Portland, Maine
Client: York Street, LLC, 36 Danforth Street, Portland, ME 04101

Drawing No. C2.01

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UPPER PARKING LEVEL INSET
1"=30'

SITE DATA

ZONE: B3 DOWNTOWN BUSINESS		
SITE AREA	66,787 S.F. (±1.5 ACRES)	
BUILDING AREA		
RETAIL	9,955 S.F.	
RESTAURANT	7,000 S.F.	
RESIDENTIAL (63 UNITS/4 LEVELS)	80,798 S.F.	
TOTAL	97,753 S.F.	

PARKING	REQUIRED	PROVIDED
NEW STRUCTURE		
TOTAL PARKING		
RETAIL (1 SP/200 S.F. ABOVE 2,000 S.F.)	40	
RESTAURANT (1 SP/150 S.F. NOT INCLUDING KITCHEN & STORAGE)	33	
RESIDENTIAL (1 SP/UNIT)	63	
27 HIGH STREET	2	
SUBTOTAL	138	
REDUCTION FOR SHARED USE	–7	
REDUCTION FOR OFF SET PEAKS	–7	
TOTAL	124	211
BARRIER FREE	5	8

SPACE AND BULK STANDARDS

	B3 ZONE REQUIREMENTS	PROVIDED
MIN. LOT SIZE	NONE	66,787 S.F.
MIN. LOT WIDTH	NONE	204'
BUILDING SETBACKS		
FRONT	5' OR LESS	> 0'
YORK ST. CLOSEST		1.16'
YORK ST. FURTHEST		21.32'
YORK ST. AVERAGE *		6.35'
HIGH ST. CLOSEST		4.69'
HIGH ST. FURTHEST		5.32'
HIGH ST. AVERAGE *		5.01'
SIDE	NONE	> 0'
REAR	NONE	> 0'
MIN. BUILDING HEIGHT	35'	> 35'
MAX. BUILDING HEIGHT	45'	44.4'
MIN. STREET FRONTAGE	15'	> 15'
MAXIMUM LOT COVERAGE	100%	< 100%

* AVERAGE BASED ON BUILDING FOOTPRINT

30 0 10 30 60
1 inch = 30 ft.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
ALTON M. PALMER III
No. 6231
REGISTERED PROFESSIONAL ENGINEER
11/13/15

Rev.	Date	Revision
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SITE PLAN REVIEW	8/7/15	AMP

Design: CEH | Draft: CG | Date: JUNE 2015
Checked: AMP | Scale: 1"=30' | Job No.: 3018
File Name: 3018–SP.dwg

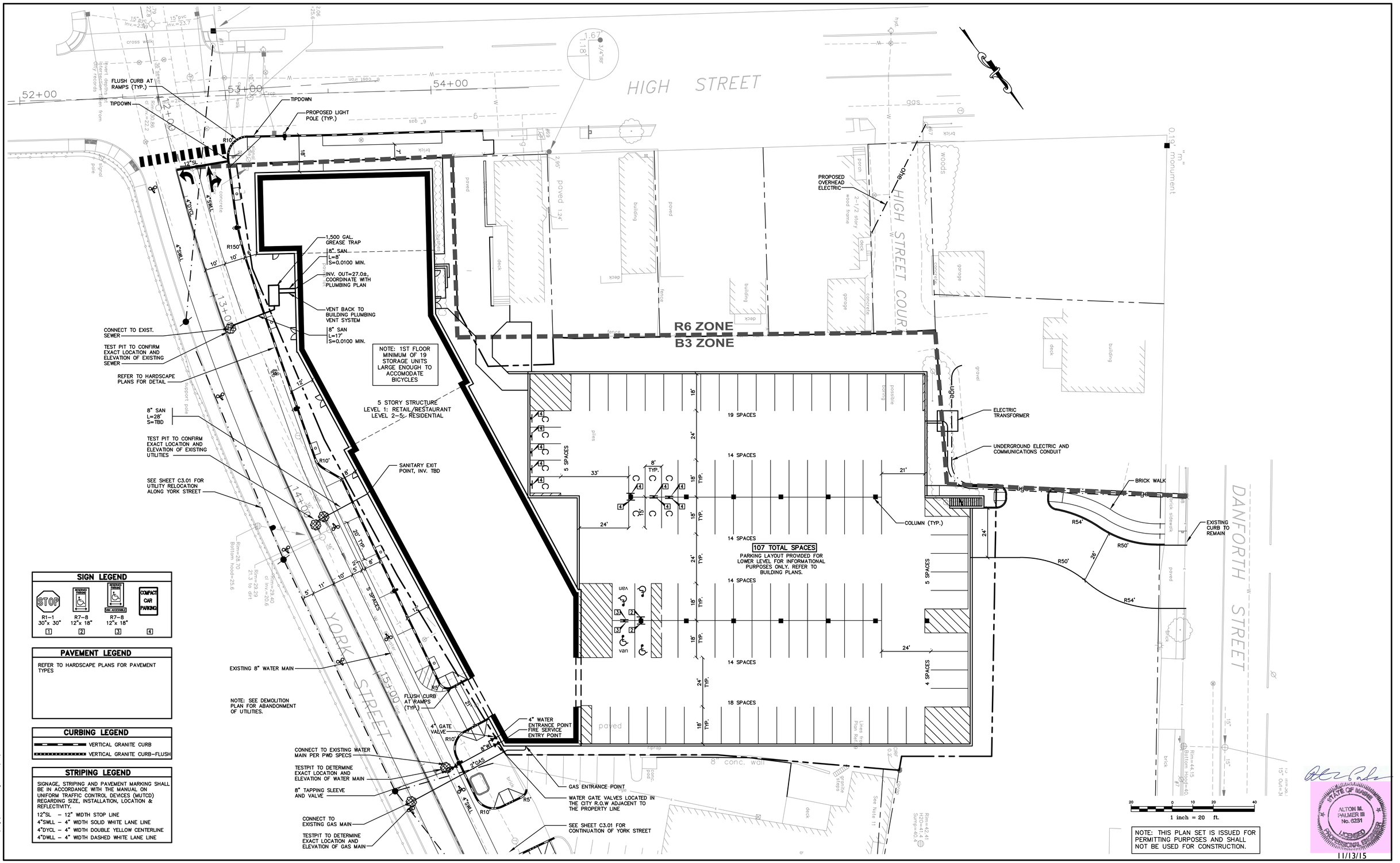
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Drawing Name: Overall Site and Utility Plan
Project: York Street – Mixed Use Development, Portland, Maine
Client: York Street, LLC, 36 Danforth Street, Portland, ME 04101

Drawing No. C3.01

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SIGN LEGEND

R1-1 30"x 30" [1]	R7-8 12"x 18" [2]	R7-8 12"x 18" [3]	[4]
STOP	RESERVED PARKING	RESERVED PARKING VAN ACCESSIBLE	COMPACT CAR PARKING

PAVEMENT LEGEND

REFER TO HARDSCAPE PLANS FOR PAVEMENT TYPES

CURBING LEGEND

VERTICAL GRANITE CURB

VERTICAL GRANITE CURB-FLUSH

STRIPING LEGEND

SIGNAGE, STRIPING AND PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) REGARDING SIZE, INSTALLATION, LOCATION & REFLECTIVITY.

12"SL – 12" WIDTH STOP LINE
4"SWLL – 4" WIDTH SOLID WHITE LANE LINE
4"DYCL – 4" WIDTH DOUBLE YELLOW CENTERLINE
4"DWLL – 4" WIDTH DASHED WHITE LANE LINE

ALTON M. PALMER III No. 6231 LICENSED PROFESSIONAL ENGINEER STATE OF MAINE

11/13/15

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File Name: 3018-SP.dwg		

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Drawing Name:	Site and Utility Plan
Project:	**York Street – Mixed Use Development** Portland, Maine
Client:	**York Street, LLC** 36 Danforth Street, Portland, ME 04101

Drawing No. C3.02

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DRAINAGE STRUCTURE SCHEDULE					
STRUCTURE	SIZE	RIM	INV. IN/SIZE (FROM)	INV. OUT/SIZE (TO)	COMMENTS
EXIST. CB1	4'ø	EXIST.	28.91/12"(DMH1)	28.81/12"(EXIST.)	
CB1	2'ø	42.50	–	38.50/12"(DMH2)	NYLOPLAST
CB2	2'ø	42.75	39.33/4"(UD)	39.23/12"(DMH2)	NYLOPLAST W/ BEEHIVE GRATE
CB3	NOT USED				
CB4	2'ø	47.50	–	44.00/12"(CB5)	NYLOPLAST
CB5	2'ø	45.50	41.50/12"(CB4)	41.40/12"(DMH2)	NYLOPLAST
CB6	4'ø	27.98	–	24.98/12"(DMH3)	
DMH1	4'ø	33.07	29.05/12"(DMH2) 29.05/12"(RD)	28.95/12"(EXIST. CB1)	
DMH2	4'ø	39.50	35.50/12"(GARAGE)	35.40/12"(DMH1)	
DMH3	4'ø	28.22	24.80/12"(CB6) TBD/12"(GARAGE)	TBD/15"(SAN)	

DEWATERING NOTES

DEWATERING:

1. WATER ENCOUNTERED WITHIN THE AREA OF THE BUILDING/PARKING CONSTRUCTION DURING THE EXCAVATION PROCESS SHALL BE COLLECTED IN A STONE FILLED SUMP. THE STONE FILLED SUMP SHALL BE A MINIMUM OF 2 FEET BELOW THE ELEVATION OF THE EXCAVATION.
2. WATER FROM THE SUMP SHALL BE PUMPED TO THE DEWATERING DISCHARGE AREA SHOWN ON C201.
3. AT NO TIME SHALL WATER BE PUMPED DIRECTLY INTO THE CITY STORM DRAIN SYSTEM UNLESS IT HAS FIRST BEEN FILTERED THROUGH A DIRT BAG OR ENGINEERED APPROVED FILTERING PRACTICE.
4. THE CONTRACTOR SHALL CHECK ALL COMPONENTS OF THE DEWATERING PROCESS TO CONFIRM WATER LEAVING THE SITE IS TRANSPORTING NO SUSPENDED SOIL MATERIAL PRIOR TO DISCHARGE INTO THE CITY STORM DRAIN SYSTEM.
5. EROSION AND SEDIMENTATION CONTROL SHALL NOT BE LIMITED TO THE NOTES CONTAINED ON THIS PLAN. REFER TO THE EROSION CONTROL REPORT FOR ADDITIONAL REQUIRED EROSION CONTROL MEASURES FOR THE PROJECT.

ACCESSIBLE ROUTE NOTES:

1. THE ACCESSIBLE ROUTE IS HIGHLIGHTED ON THE GRADING PLAN.
2. THE ACCESSIBLE ROUTE SHALL BE A MINIMUM OF 36 INCHES WIDE.
3. AN ACCESSIBLE ROUTE LESS THAN 60 INCHES WIDE SHALL HAVE PASSING AREAS EVERY 200 FEET.
4. THE MAXIMUM ACCESSIBLE RUNNING SLOPE IS 1/20 OR 5.00%
5. THE MAXIMUM ACCESSIBLE CROSS SLOPE SHALL BE 1/48 OR 2.08%
6. CURB RAMPS SHALL HAVE A MAXIMUM RISE OF 6 INCHES AND A MAXIMUM RUNNING SLOPE OF 1/12 OR 8.33%
7. THE MAXIMUM CROSS SLOPE OF CURB RAMPS SHALL BE 1/48 OR 2.08%
8. A MINIMUM LANDING AREA 3 FEET LONG AND THE WIDTH OF THE CURB RAMP SHALL BE PROVIDED AT THE TOP AND BOTTOM OF CURB RAMPS. THE LANDING AREA SHALL HAVE A MAXIMUM RUNNING SLOPE OF 1/48 OR 2.08% AND A MAXIMUM CROSS SLOPE OF 1/48 OR 2.08%.

NOTE: ENTIRE SIDEWALK ALONG YORK STREET IS ACCESSIBLE AND SHALL NOT EXCEED THE FOLLOWING STANDARD:
MAX CROSS SLOPE = 2%
MAX LONGITUDINAL SLOPE = 5%

NOTE: WHERE ONLY A BC SPOT GRADE IS SHOWN, TC IS 7" HIGHER

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

ALTON M. PALMER III No. 6231 LICENSED PROFESSIONAL ENGINEER STATE OF MAINE

11/13/15

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Rev.	Date	Revision
1	11/13/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

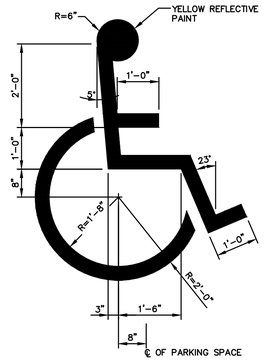
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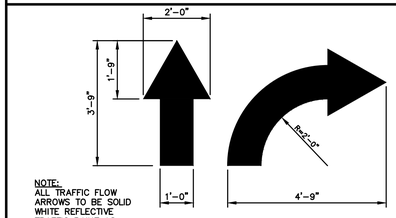
Drawing Name: **Grading, Drainage, and Erosion Control Plan**
Project: **York Street – Mixed Use Development**, Portland, Maine
Client: **York Street, LLC**, 36 Danforth Street, Portland, ME 04101

Drawing No. *C4.01*



INTERNATIONAL BARRIER FREE SYMBOL

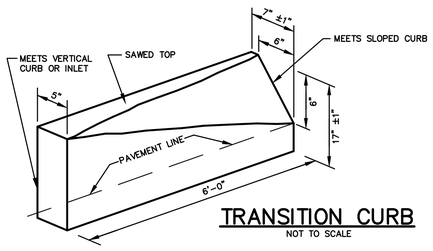
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NOTE:
ALL TRAFFIC FLOW ARROWS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS.

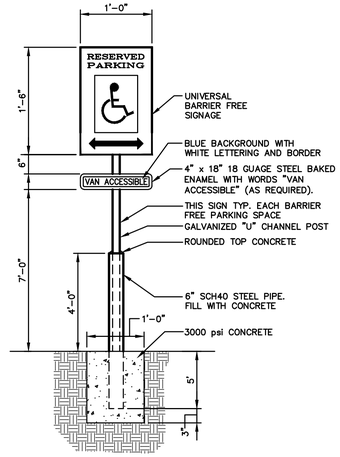
TRAFFIC FLOW ARROWS

NOT TO SCALE



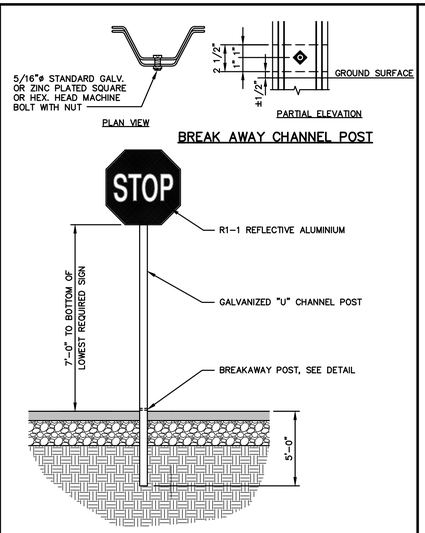
TRANSITION CURB

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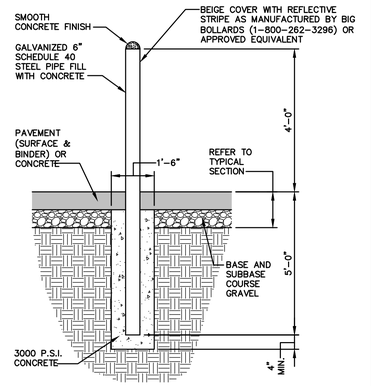
BARRIER FREE PARKING SIGN

NOT TO SCALE



STOP SIGN

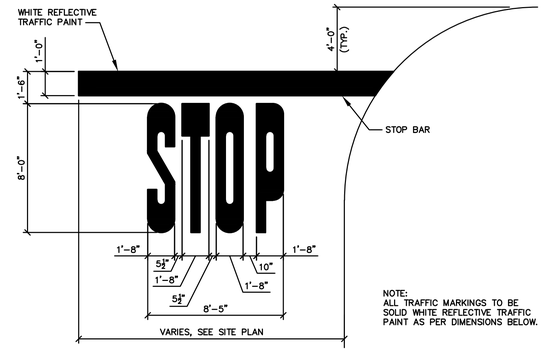
NOT TO SCALE



GUARD POST

(DUMPSTER ENCLOSURE, IN PARKING LOT ADJACENT TO COLUMN, AND REAR BUILDING ENTRANCE ONLY)

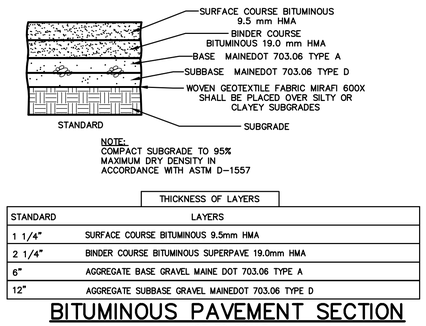
NOT TO SCALE



NOTE:
ALL TRAFFIC MARKINGS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS BELOW.

PAVEMENT MARKINGS

NOT TO SCALE

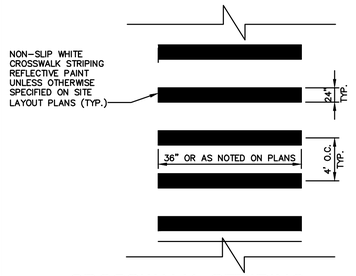


NOTE:
COMPACT SUBGRADE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557

THICKNESS OF LAYERS	
STANDARD	LAYERS
1 1/4"	SURFACE COURSE BITUMINOUS 9.5mm HMA
2 1/4"	BINDER COURSE BITUMINOUS SUPERPAVE 19.0mm HMA
6"	AGGREGATE BASE GRAVEL MAINE DOT 703.06 TYPE A
12"	AGGREGATE SUBBASE GRAVEL MAINEDOT 703.06 TYPE D

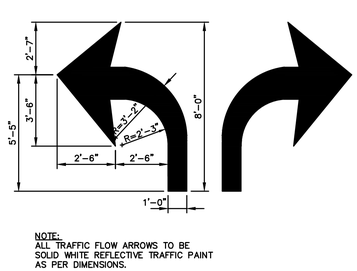
BITUMINOUS PAVEMENT SECTION

NOT TO SCALE



CROSSWALK STRIPING

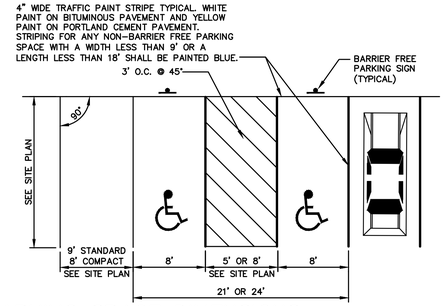
NOT TO SCALE



NOTE:
ALL TRAFFIC FLOW ARROWS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS.

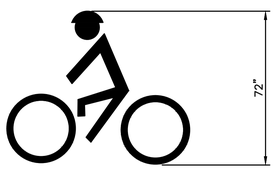
TRAFFIC FLOW ARROWS

NOT TO SCALE



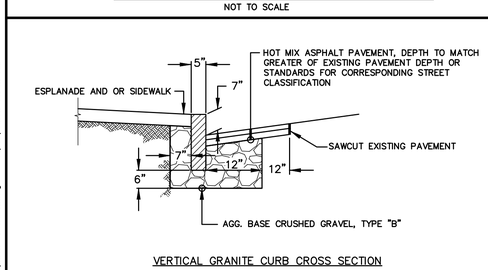
PARKING SPACE DIMENSIONS

NOT TO SCALE

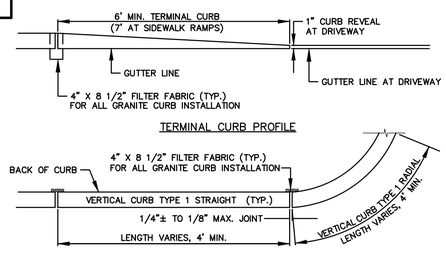


BICYCLE PAVEMENT MARKING

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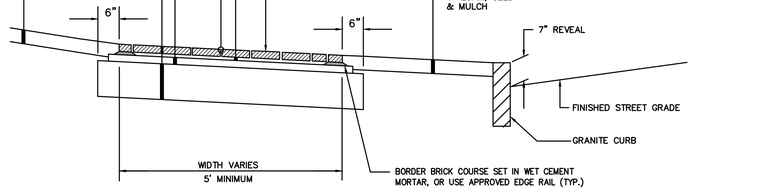
VERTICAL GRANITE CURB CROSS SECTION



VERTICAL GRANITE CURB PLAN VIEW

VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREETS

NOT TO SCALE



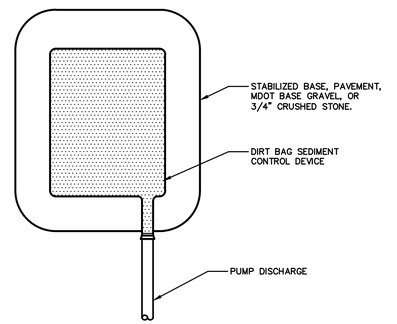
BRICKS TO BE USED:

NEW CONSTRUCTION:
4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA.
LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

REPAIR /MAINTENANCE TO EXISTING BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS.
SPECIFICATION NUMBER: "VERMONT BACKER BRICK", ITEM NUMBER # VBBB

BRICK SIDEWALK WITH BITUMINOUS BASE

NOT TO SCALE



DIRT BAG PUMP OUTLET

NOT TO SCALE

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE
ALTON M. PALMER III
No. 6231
LICENSED
PROFESSIONAL ENGINEER

11/13/15

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Design: CEH	Draft: CG	Date: JUNE 2015
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File Name: 3018-DETAILS.dwg		

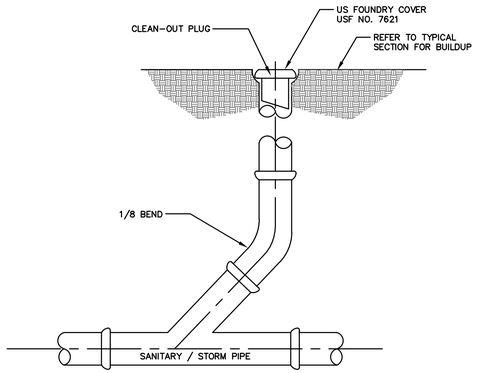
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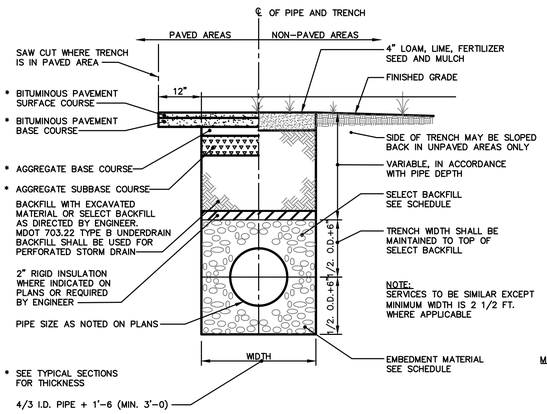
Drawing Name:	Details 1
Project:	York Street – Mixed Use Development Portland, Maine
Client:	York Street, LLC 36 Danforth Street, Portland, ME 04101

Drawing No.
C5.01

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CLEANOUT
NOT TO SCALE



SCHEDULE OF TRENCH BACKFILL

TYPE OF PIPE	EMBEDMENT MATERIAL	SELECT BACKFILL	SELECT BACKFILL ON CITY PROPERTY
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL	3/4" CRUSHED STONE, 12" ABOVE TOP OF PIPE
PVC-SDR 35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL	3/4" CRUSHED STONE, 12" ABOVE TOP OF PIPE
PERFORATED PVC-SDR35 HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	3/4" CRUSHED STONE, 12" ABOVE TOP OF PIPE

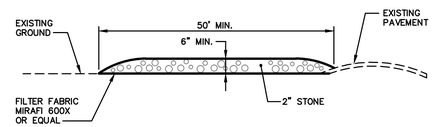
NOTE:
1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES, 12" BELOW FINISH GRADE.
3. RIBBED CORRUGATED POLYETHYLENE PIPE MATERIAL, SMOOTH WALL INTERIOR, IS NOT PERMITTED WITHIN CITY PROPERTY, EXCEPT FOR UNDERDRAIN.

MINIMUM COVER	PIPE
2'-0"	DRAIN (1)
5'-5"	WATER
5'-0"	SEWER

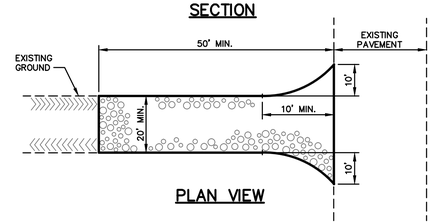
(1) COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION.

TRENCH SECTION
NOT TO SCALE

NOTE: CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES

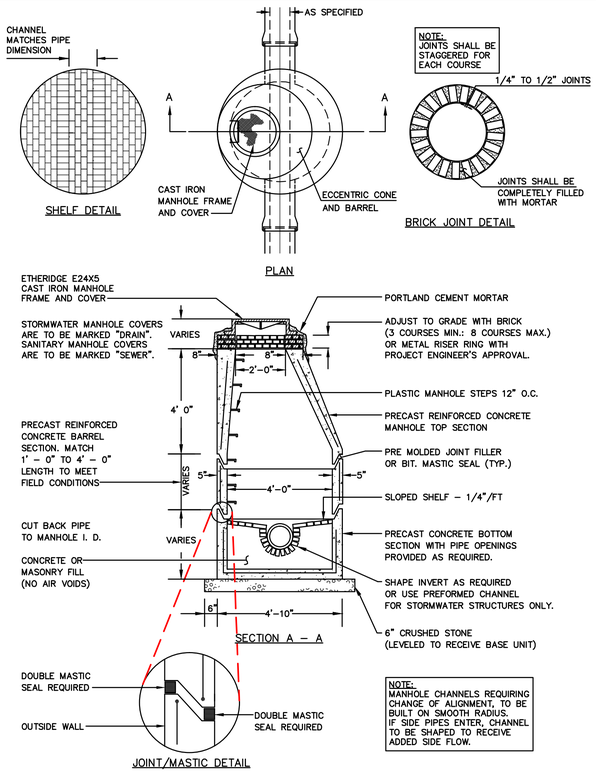


SECTION

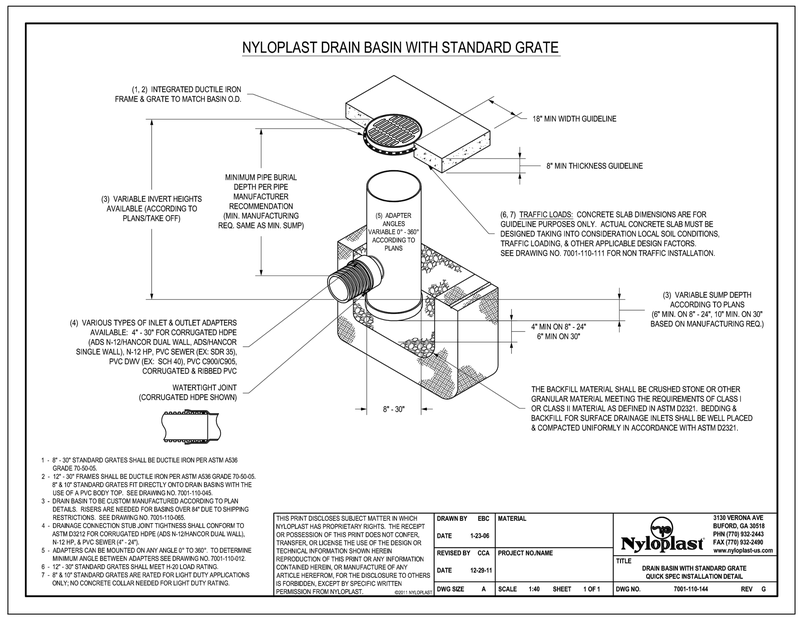


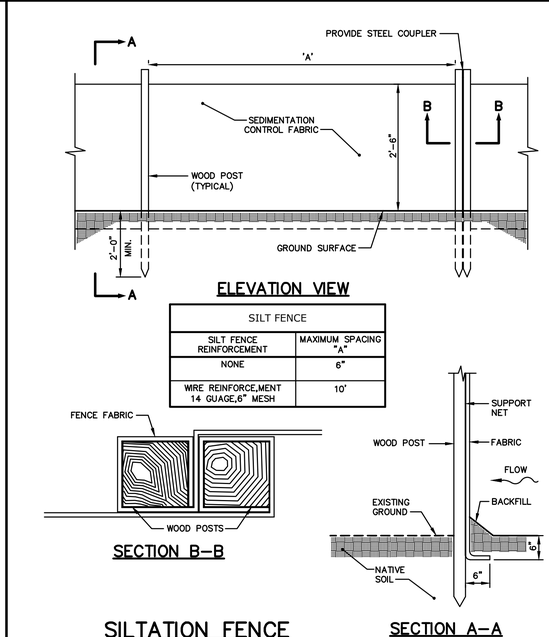
PLAN VIEW

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



PRECAST CONCRETE MANHOLE
NOT TO SCALE





ELEVATION VIEW

SILT FENCE	
SILT FENCE REINFORCEMENT	MAXIMUM SPACING "A"
NONE	6"
WIRE REINFORCEMENT 14 GUAGE, 6" MESH	10'

SECTION B–B

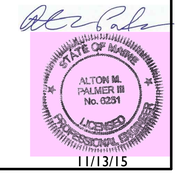
SECTION A–A

SILTATION FENCE
NOT TO SCALE

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C–478.
4. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLID AND SHALL HAVE ONE 7/8" DIAMETER DRILLED PICK HOLE LOCATED 8" FROM THE CENTER OF THE COVER.
5. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
6. ALL MANHOLE RISERS SHALL BE ETHERIDGE 24" OR APPROVED EQUAL.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C–32–63, GRADE MA AND SA.
8. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
9. CATCH BASIN FRAMES FOR TYPE A4 CATCH BASIN CURB INLETS SHALL BE ETHERIDGE DR5A OR APPROVED EQUAL.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48–CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
12. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A CASCO TRAP. SEE FIGURE II–09.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.



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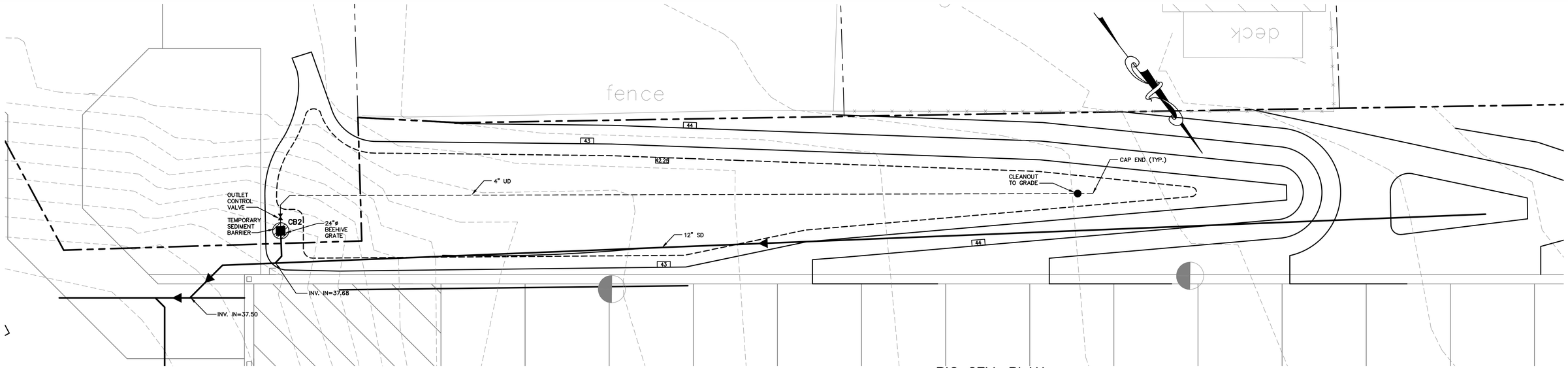
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Drawing Name: Details 2
Project: York Street – Mixed Use Development
Portland, Maine
Client: York Street, LLC
36 Danforth Street, Portland, ME 04101

Drawing No. C5.02

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BIO CELL PLAN
1"=5'

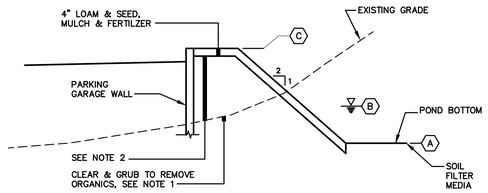
Table 1 MEDOT Specifications for Aggregate (MEDOT #703.01)	
SIEVE SIZE	% PASSING BY WEIGHT
3/8"	100
#4	95–100
#8	80–100
#16	50–85
#30	25–60
#60	10–30
#100	2–10
#200	0–5

Table 2 MEDOT Specifications for Underdrain Type B (MEDOT #703.22)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5

SCHEDULE A		
⬡	ITEM DESCRIPTION	BIORETENTION CELL DIMENSION/ ELEVATION
A	CHANNEL PROTECTION VOLUME STAGE	42.75
B	TOP SOIL FILTER	42.25
C	TOP UNDERDRAIN BEDDING STONE	40.75
D	PIPE INVERT: 4" PERF. UD	40.08
E	BOTTOM UNDERDRAIN BEDDING	39.75

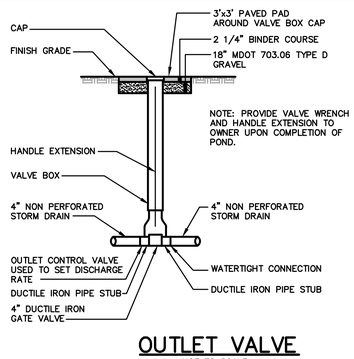
NOTES:
1. EMBANKMENT FOOTPRINT SHALL BE CLEAR OF TRASH/DEBRIS AND ANY ROCKS GREATER THAN 6", BE FREE OF ANY STANDING WATER, BE GRADED TO BE NO STEEPER THAN 1H:1V, BE SCARIFIED PRIOR TO EMBANKMENT FILL PLACEMENT, AND BE INSPECTED AND APPROVED BY THE PROJECT ENGINEER BEFORE FILL PLACEMENT BEGINS.

2. COMPACTED EMBANKMENT MATERIAL, MEETING MDOT SECTION 703.19, GRANULAR BORROW MODIFIED TO HAVE 100% PASSING THE 6" SIEVE. (COMPACTED TO 95% OF MODIFIED PROCTOR). SUBMIT EMBANKMENT MATERIAL GRADATION TO PROJECT ENGINEER PRIOR TO CONSTRUCTING EMBANKMENT.

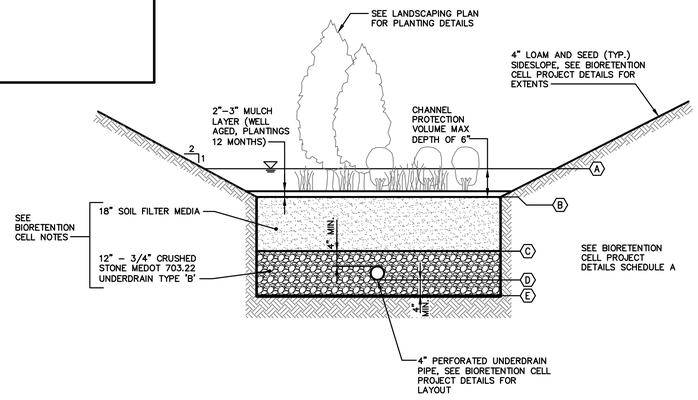


SCHEDULE B EMBANKMENT SCHEDULE	
ITEM DESCRIPTION	DIMENSION/ELEVATION
(A) POND BASE ELEVATION	42.25
(B) PEAK ELEVATION – CHANNEL PROTECTION VOLUME	42.75
(C) TOP OF CURB	43.00

TYPICAL POND CROSS SECTION
NOT TO SCALE



OUTLET VALVE
NOT TO SCALE



BIORETENTION CELL DETAIL
NOT TO SCALE

BIORETENTION CELL NOTES:

SOIL SPECIFICATIONS:

1. THE SOIL FILTER MEDIA SHALL BE A LAYERED SYSTEM CONSISTING OF THE FOLLOWING FROM THE BOTTOM:
   A. 12" OF LOAMY COARSE SAND, MEDOT 703.11, SEE TABLE 1.
   B. 2" LAYER OF TOPSOIL (SEE "C" BELOW) ROTOTILLED INTO THE LOAMY COARSE SAND LAYER.
   C. 6" OF NON–CLAYEY, LOAMY TOPSOIL SUCH AS USDA SANDY LOAM TOPSOIL WITH 5–8% HUMIFIED ORGANIC MATTER. SUPERHUMUS OR EQUIVALENT MAY BE ADDED TO THE TOPSOIL TO INCREASE ORGANIC CONTENT.

2. SOIL FILTER MEDIA MIXTURE SHALL HAVE A PERMEABILITY OF 2.4 IN./HR. TO 4 IN./HR UPON COMPACTION BETWEEN 90% AND 92% STANDARD PROCTOR (ASTM D698).

SUBMITTALS:

1. SUBMIT RESULTS OF FIELD AND LABORATORY TESTING TO PROJECT ENGINEER.

2. SUBMIT 75 lb. SAMPLE OF EACH TYPE OF MATERIAL: SUBMIT IN AIR TIGHT CONTAINERS TO TESTING LABORATORY.

3. THE FOLLOWING MATERIAL SHALL BE SUBMITTED:
   A. SAND.
   B. UNDERDRAIN BEDDING MATERIAL.

4. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 – STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES; 1996a ON EACH TYPE OF THE SAMPLE MATERIAL AND SUBMIT RESULTS TO PROJECT ENGINEER.

5. PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698. SUBMIT RESULTS TO THE PROJECT ENGINEER.

6. PERFORM ONE COMPACTION DENSITY TEST ON THE IN PLACE SOIL FILTER FOR EVERY 2,000 SQUARE FEET OF FILTER SURFACE AREA. TEST SHALL CONFORM TO ASTM D 2922 – STANDARD TEST METHODS FOR DENSITY OF SOIL AND SOIL–AGGREGATE IN PLACE BY NUCLEAR METHODS (SHALLOW DEPTH); 1996. SUBMIT RESULTS TO THE PROJECT ENGINEER.

CONSTRUCTION:

1. SOIL FILTER MEDIA AND UNDERDRAIN BEDDING MATERIAL SHALL BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR.

2. PERFORATED UNDERDRAIN PIPE SHALL BE 4" PIPE. SPACED 15 FEET ON CENTER MAXIMUM.

3. TRIBUTARY AREAS SHALL BE STABILIZED PRIOR TO INSTALLATION OF THE SOIL FILTER MEDIA MIXTURE AND UNDERDRAIN. STABILIZED IS DEFINED AS PAVED IF IN A PARKING AREA OR ROADWAY, AND 90% GRASS CATCH IF IN A VEGETATED AREA.

4. OUTFLOW OF THE BIORETENTION CELL SHALL BE CONTROLLED BY A 4" DUCTILE IRON GATE VALVE WITH VALVE WRENCH AND EXTENSION (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT). A THREE PIECE VALVE BOX (AVAILABLE FROM E.J. PRESCOTT OR EQUIVALENT) SHALL BE INSTALLED OVER THE VALVE.

5. ALL EQUIPMENT USED WITHIN THE LIMITS OF THE BIORETENTION CELL SHALL BE LOW GROUND PRESSURE VEHICLES (LESS THAN 2.0 PSI) WHEN FULLY LOADED.

6. UPON COMPLETION OF THE INSTALLATION OF THE SOIL FILTER MEDIA AND THE PLANTING INSTALLATION, THE CONTRACTOR SHALL FLOOD THE BIORETENTION CELL TO THE DESIGN ELEVATION WITH CLEAN WATER AND ADJUST THE VALVE TO OBTAIN A 24 HOUR TO 32 HOUR RELEASE TIME.

CONSTRUCTION OVERSIGHT

INSPECTION OF THE FILTER BASIN SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY THE DESIGN ENGINEER WITH REQUIRED REPORTING TO THE DEP. AT A MINIMUM, INSPECTIONS WILL OCCUR:

1. AFTER PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
2. AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA.
3. AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED. BIORETENTION CELLS MUST BE STABILIZED PER THE PROVIDED PLANTING SCHEME AND DENSITY FOR THE CANOPY COVERAGE OF 30% AND 50%
4. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
5. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN WILL BE APPROVED BY THE DESIGN ENGINEER AFTER TESTS BY A CERTIFIED LABORATORY SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

NOTE: CONTRACTOR SHALL NOTIFY PROJECT ENGINEER 48 HOURS PRIOR TO THE MILESTONES LISTED ABOVE TO ALLOW FOR INSPECTION.

NOTE: THIS PLAN SET IS ISSUED FOR PERMITTING PURPOSES AND SHALL NOT BE USED FOR CONSTRUCTION.

STATE OF MAINE · ALTON M. PALMER III · No. 5231 · LICENSED PROFESSIONAL ENGINEER

11/13/15

C:\CAD WORKING\3018 – York Street\dwg\3018–DETAILS.dwg 11/17/2015 11:46 AM

Rev.	Date	Revision
1	11/13/15	RESPONSE TO CITY COMMENTS

Issued For	Date	By
SITE PLAN REVIEW	8/7/15	AMP

Design: CEH | Draft: CG | Date: JUNE 2015
Checked: AMP | Scale: AS SHOWN | Job No.: 3018
File Name: 3018–DETAILS.dwg

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Project: York Street – Mixed Use Development
Portland, Maine
Client: York Street, LLC
36 Danforth Street, Portland, ME 04101

Drawing No. C5.03

EROSION CONTROL MEASURES AND SITE STABILIZATION

THE PRIMARY EMPHASIS OF THE EROSION/SEDIMENTATION CONTROL PLAN, WHICH WILL BE IMPLEMENTED FOR THIS PROJECT, IS AS FOLLOWS:

- DEVELOPMENT OF A CAREFUL CONSTRUCTION SEQUENCE.
- RAPID REVEGETATION OF DENUDED AREAS TO MINIMIZE THE PERIOD OF SOIL EXPOSURE.
- RAPID STABILIZATION OF DRAINAGE PATHS TO AVOID RILL AND GULLY EROSION.
- MAINTENANCE GRADING AT DAILY SHUTDOWN TO MINIMIZE RUTTING AND EROSION ISSUES FROM OVERNIGHT RAIN EVENTS.
- THE USE OF ON-SITE MEASURES TO CAPTURE SEDIMENT (HAY BALES/ STONE CHECK DAMS/SILT FENCE, ETC.)

THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL DEVICES WILL BE IMPLEMENTED AS PART OF THE SITE DEVELOPMENT. THESE DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS OR AS DESCRIBED WITHIN THIS REPORT. FOR FURTHER REFERENCE, SEE THE LATEST EDITION OF THE MAINE EROSION AND SEDIMENT CONTROL BMPS.

A. DEWATERING

WATER FROM CONSTRUCTION TRENCH DEWATERING SHALL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE A VEGETATED AREA SELECTED TO AVOID FLOODING, ICING, AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE INCLUDING THE OCEAN. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 50 FEET OF A PROTECTED NATURAL RESOURCE INCLUDING THE OCEAN.

B. INSPECTION AND MONITORING

MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION SEASON. WEEKLY AND AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUOUS FUNCTION. THE CONTRACTOR SHALL PROVIDE WEEKLY INSPECTION REPORTS TO THE ENGINEER DURING CONSTRUCTION. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDING AND MULCHING, THE CONTRACTOR SHALL IN THE SPRING INSPECT AND REPAIR ANY DAMAGES AND/OR UNESTABLISHED SPOTS. ESTABLISHED VEGETATIVE COVER MEANS A MINIMUM OF 90% OF AREAS VEGETATED WITH VIGOROUS GROWTH.

C. TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING MEASURES ARE PLANNED AS TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION:

1. CRUSHED STONE-STABILIZED CONSTRUCTION ENTRANCE SHALL BE PLACED AT THE LIMIT OF WORK AT THOMASTON COMMONS WAY.

2. SILTATION FENCE OR WOOD WASTE COMPOST BERMS SHALL BE INSTALLED DOWNSTREAM OF ANY DISTURBED AREAS TO TRAP RUNOFF- BORNE SEDIMENTS UNTIL GRASS AREAS ARE REVEGETATED. THE SILT FENCE AND/OR WOOD WASTE COMPOST BERMS SHALL BE INSTALLED PER THIS PLAN PACKAGE AND INSPECTED AT LEAST ONCE A WEEK AND BEFORE AND IMMEDIATELY AFTER A STORM EVENT OF 0.5 INCHES OR GREATER, AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE OR BERM LINE. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM. WOOD WASTE COMPOST BERMS ARE NOT TO BE USED ADJACENT TO WETLAND AREAS THAT ARE NOT TO BE DISTURBED.

3. STRAW OR HAY MULCH INCLUDING HYDROSEEDING IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND OCTOBER 15TH ON SLOPES OF LESS THEN 15 PERCENT SHALL BE ANCHORED BY APPLYING WATER; MULCH PLACED ON SLOPES OF EQUAL TO OR STEEPER THAN 15 PERCENT SHALL BE COVERED BY A FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION. FABRIC NETTING AND STAPLES SHALL BE USED ON DISTURBED AREAS WITHIN 50' OF LAKES, STREAMS, AND WETLANDS REGARDLESS OF THE UPSTREAM SLOPE. MULCH PLACED BETWEEN OCTOBER 15TH AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT SHALL BE COVERED WITH A FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SLOPES STEEPER THAN 3:1 AND EQUAL TO OR FLATTER THAN 2:1, WHICH ARE TO BE REVEGETATED, SHALL RECEIVE CURLEX BLANKETS BY AMERICAN EXCELSIOR OR EQUAL. SLOPES STEEPER THAN 2:1 SHALL RECEIVE RIPRAP AS NOTED ON THE PLANS. THE MULCH APPLICATION RATE FOR BOTH TEMPORARY AND PERMANENT SEEDING IS 75 LBS PER 1000 SF AS IDENTIFIED IN ATTACHMENT A OF THIS SECTION. MULCH SHALL NOT BE PLACED OVER SNOW.

4. TEMPORARY STOCKPILES OF STUMPS, GRUBBINGS, OR COMMON EXCAVATION WILL BE PROTECTED AS FOLLOWS:

a) TEMPORARY STOCKPILES SHALL NOT BE LOCATED WITHIN 100 FEET OF ANY WETLANDS WHICH WILL NOT BE DISTURBED, THE OCEAN, AND SHALL BE LOCATED AWAY FROM DRAINAGE SWALES.

b) STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS BY EITHER TEMPORARILY SEEDING THE STOCKPILE BY A HYDROSEED METHOD CONTAINING AN EMULSIFIED MULCH TACKIFIER OR BY COVERING THE STOCKPILE WITH MULCH, SUCH AS HAY, STRAW, OR EROSION CONTROL MIX.

c) STOCKPILES SHALL BE SURROUNDED BY SEDIMENTATION BARRIER AT THE TIME OF FORMATION.

5. ALL DENUDED AREAS THAT ARE WITHIN 100 FEET OF AN UNDISTURBED WETLAND OR THE OCEAN, WHICH HAVE BEEN ROUGH GRADED AND ARE NOT LOCATED WITHIN A BUILDING PAD, PARKING AREA, OR ACCESS DRIVE SUBBASE AREA, SHALL RECEIVE MULCH OR EROSION CONTROL MEASURES WITHIN 48 HOURS OF INITIAL DISTURBANCE OF SOIL. ALL AREAS WITHIN 100 FEET OF AN UNDISTURBED WETLAND OR THE OCEAN SHALL BE MULCHED PRIOR TO ANY PREDICTED RAIN EVENT REGARDLESS OF THE 48 HOUR WINDOW. IN OTHER AREAS, THE TIME PERIOD MAY BE EXTENDED TO 7 DAYS.

6. FOR WORK, WHICH IS CONDUCTED BETWEEN OCTOBER 15TH AND APRIL 15TH OF ANY CALENDAR YEAR, ALL DENUDED AREAS, SHALL BE COVERED WITH HAY MULCH OR EROSION CONTROL MIX, APPLIED AT TWICE THE NORMAL APPLICATION RATE AND ANCHORED WITH A FABRIC NETTING. THE TIME PERIOD FOR APPLYING MULCH SHALL BE LIMITED TO 2 DAYS FOR ALL AREAS.

7. THOMASTON COMMONS WAY SHALL BE SWEPT TO CONTROL MUD AND DUST AS NECESSARY. ADDITIONAL STONE SHALL BE ADDED TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.

8. DURING GRUBBING OPERATIONS STONE CHECK DAMS SHALL BE INSTALLED AT ANY EVIDENT CONCENTRATED FLOW DISCHARGE POINTS AND AS DIRECTED ON THE EROSION CONTROL PLANS.

9. SILT FENCING WITH A MINIMUM STAKE SPACING OF 6 FEET SHALL BE USED, UNLESS THE FENCE IS SUPPORTED BY WIRE FENCE REINFORCEMENT OF MINIMUM 14 GAUGE AND WITH A MAXIMUM MESH SPACING OF 6 INCHES, IN WHICH CASE STAKES MAY BE SPACED A MAXIMUM OF 10 FEET APART. THE BOTTOM OF THE FENCE SHALL BE ANCHORED.

10. WOOD WASTE COMPOST/BARK BERMS MAY BE USED IN LIEU OF SILTATION FENCING. BERMS SHALL BE REMOVED AND SPREAD IN A LAYER NOT TO EXCEED 3" THICK ONCE UPSTREAM AREAS ARE COMPLETED AND A 90% CATCH OF VEGETATION IS ATTAINED.

11. STORM DRAIN CATCH BASIN INLET PROTECTION SHALL BE PROVIDED THROUGH THE USE OF STONE SEDIMENT BARRIERS OR APPROVED SEDIMENT BAGS (SUCH AS SILT SACK). INSTALLATION DETAILS ARE PROVIDED IN THE PLAN SET. THE BARRIERS SHALL BE INSPECTED AFTER EACH RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHALL BE REMOVED AND THE BARRIER RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ½ THE DESIGN DEPTH OF THE BARRIER. THE BARRIER SHALL BE REMOVED WHEN THE TRIBUTARY DRAINAGE AREA HAS BEEN STABILIZED.

12. WATER AND/OR CALCIUM CHLORIDE SHALL BE FURNISHED AND APPLIED IN ACCORDANCE WITH MDOT SPECIFICATIONS – SECTION 637 – DUST CONTROL.

13. LOAM AND SEED IS INTENDED TO SERVE, AS THE PRIMARY PERMANENT REVEGETATIVE MEASURE FOR ALL DENUDED AREAS NOT PROVIDED WITH OTHER EROSION CONTROL MEASURES, SUCH AS RIPRAP. APPLICATION RATES ARE PROVIDED IN ATTACHMENT A OF THIS SECTION. SEEDING SHALL NOT OCCUR OVER SNOW.

14. PROPOSED GRASSED UNDERDRAIN FILTER SHALL BE USED FOR A TEMPORARY SEDIMENTATION POND DURING CONSTRUCTION.

D. PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES HAVE BEEN DESIGNED AS PART OF THE EROSION/SEDIMENTATION CONTROL PLAN:

1. ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIPRAP, ETC.) WILL BE LOAMED, LIMED, FERTILIZED, MULCHED, AND SEEDED. FABRIC NETTING, ANCHORED WITH STAPLES, SHALL BE PLACED OVER THE MULCH IN AREAS AS NOTED IN TEMPORARY EROSION CONTROL MEASURES PARAGRAPH 3 OF THIS REPORT. ALL AREAS WITHIN 100 FEET OF AN UNDISTURBED WETLAND OR THE OCEAN SHALL BE MULCHED PRIOR TO ANY PREDICTED RAIN EVENT REGARDLESS OF THE 48 HOUR WINDOW. NATIVE TOPSOIL SHALL BE STOCKPILED AND REUSED FOR FINAL RESTORATION WHEN IT IS OF SUFFICIENT QUALITY.

2. ALL STORM DRAIN PIPE OUTLETS SHALL HAVE RIPRAP APRONS AT THEIR OUTLET TO PROTECT THE OUTLET AND RECEIVING CHANNEL FROM SCOUR AND DETERIORATION. INSTALLATION DETAILS ARE PROVIDED IN THE PLAN SET. THE APRONS SHALL BE INSTALLED AND STABILIZED TO THE EXTENT PRACTICABLE PRIOR TO DIRECTING RUNOFF TO THE TRIBUTARY PIPE OR CULVERT.

3. CATCH BASINS SHALL BE PROVIDED WITH SEDIMENT SUMPS AND INLET HOODS (THE SNOUT) FOR ALL OUTLET PIPES THAT ARE 18" IN DIAMETER OR LESS.

14.6 IMPLEMENTATION SCHEDULE

THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE REQUIRED TO INSURE THE EFFECTIVENESS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE OPTIMIZED:

IT IS ANTICIPATED THAT CONSTRUCTION OF THE SITE WILL BE COMPLETED BY 2016.

NOTE: FOR ALL GRADING ACTIVITIES, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO OVEREXPOSE THE SITE, THIS SHALL BE ACCOMPLISHED BY LIMITING THE DISTURBED AREA.

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE AT THE LIMIT OF WORK AT THOMASTON COMMONS WAY.

2. INSTALL PERIMETER SILT FENCE AND/OR WOOD WASTE BERMS PRIOR TO GRUBBING RESPECTIVE AREAS.

3. COMMENCE INSTALLATION OF THE GRASSED UNDERDRAIN FILTER. CONSTRUCT TEMPORARY RISE OUTLET. MAINTAIN RISE OUTLET UNTIL TRIBUTARY AREA IS STABILIZED.

4. CLEAR AND GRUB SITE. INSTALL STONE CHECK DAMS AT ANY EVIDENT CONCENTRATED FLOW DISCHARGE POINTS.

5. DIRECT SITE RUNOFF TO TEMPORARY SEDIMENTATION BASIN.

6. FOUNDATION PREPARATION AREA SHALL BE EXCAVATED FOR INSTALLATION OF THE BUILDING FOOTINGS. BUILDING WORK WILL BE ON GOING THROUGH THE REMAINDER OF THE PROJECT.

7. COMMENCE INSTALLATION OF DRAINAGE APPURTENANCES.

8. COMMENCE EARTHWORK AND GRADING TO SUBGRADE.

9. COMMENCE INSTALLATION OF ELECTRICAL SERVICE.

10. COMMENCE INSTALLATION OF WATER AND SEWER LINES.

11. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.

12. COMPLETE INSTALLATION OF UNDERGROUND UTILITIES TO WITHIN 5' OF THE BUILDINGS.

13. INSTALL LIGHT POLE FOUNDATIONS AND LIGHT POLES.

14. COMPLETE REMAINING EARTHWORK OPERATIONS.

15. COMPLETE INSTALLATION OF CATCH BASINS AND APPURTENANCES.

16. INSTALL SUB-BASE AND BASE GRAVEL WITHIN PARKING FIELDS, WALKWAYS, AND ALL DRIVEWAYS.

17. INSTALL CURBING IN PARKING FIELDS, DRIVEWAYS, AND ALONG THE STREETS AS NEEDED.

18. INSTALL BASE COURSE PAVING FOR ACCESS DRIVE AND PARKING AREA AS WELL AS CONCRETE SURFACES.

19. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.

20. UPON STABILIZATION OF TRIBUTARY AREA, REMOVE TEMPORARY SEDIMENTATION OUTLET FROM GRASSED UNDERDRAIN. CONSTRUCT SOIL FILTER, UNDERDRAIN AND OUTLET.

21. INSTALL SURFACE COURSE PAVING FOR ACCESS DRIVE AND PARKING AREAS. STRIPE PER PLAN.

22. ONCE THE SITE IS STABILIZED AND A 90% CATCH OF VEGETATION HAS BEEN OBTAINED, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

23. TOUCH UP LOAM AND SEED.

NOTE: ALL DENUDED AREAS NOT SUBJECT TO FINAL PAVING, RIPRAP, OR GRAVEL SHALL BE REVEGETATED.

PRIOR TO CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE FOR THE COMPLETION OF THE WORK, WHICH WILL SATISFY THE FOLLOWING CRITERIA:

1. THE ABOVE CONSTRUCTION SEQUENCE SHOULD GENERALLY BE COMPLETED IN THE SPECIFIED ORDER; HOWEVER, SEVERAL SEPARATE ITEMS MAY BE CONSTRUCTED SIMULTANEOUSLY. WORK MUST ALSO BE SCHEDULED OR PHASED TO REDUCE THE EXTENT OF THE EXPOSED AREAS AS SPECIFIED BELOW. THE INTENT OF THIS SEQUENCE IS TO PROVIDE FOR EROSION CONTROL AND TO HAVE STRUCTURAL MEASURES SUCH AS SILT FENCE AND CONSTRUCTION ENTRANCES IN PLACE BEFORE LARGE AREAS OF LAND ARE DENUDED.

2. THE WORK SHALL BE CONDUCTED IN SECTIONS WHICH SHALL:

a) LIMIT THE AMOUNT OF EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE PROCEEDING 30 DAYS.

b) REVEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT; OR TEMPORARILY STABILIZED WITHIN 48 HOURS OF INITIAL DISTURBANCE OF SOIL FOR AREAS WITHIN 100 FEET OF AN UNDISTURBED WETLAND OR THE OCEAN AND 7 DAYS FOR ALL OTHER AREAS. AREAS WITHIN 100 FEET OF AN UNDISTURBED WETLAND OR THE OCEAN SHALL BE MULCHED PRIOR TO ANY PREDICTED RAIN EVENT REGARDLESS OF THE 48 HOUR WINDOW.

c) INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEM AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE. THE DITCHES SHALL BE IMMEDIATELY LINED OR REVEGETATED AS SOON AS THEIR INSTALLATION IS COMPLETE.

14.7 EROSION, SEDIMENTATION AND STABILIZATION CONTROL PLAN

THE EROSION CONTROL PLAN IS INCLUDED IN THE PLAN SET.

14.8 DETAILS AND SPECIFICATIONS

THE EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

14.9 WINTER STABILIZATION PLAN

THE WINTER CONSTRUCTION PERIOD IS FROM NOVEMBER 1 THROUGH APRIL 15. IF THE CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15 THEN THE SITE NEEDS TO BE PROTECTED WITH OVER-WINTER STABILIZATION. AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT; VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD.

WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT ANY AREA LEFT EXPOSED CAN BE CONTROLLED BY THE CONTRACTOR. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDER TAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT.

ALL AREAS SHALL BE CONSIDERED TO BE DENUDED UNTIL THE SUBBASE GRAVEL IS INSTALLED IN ROADWAY/PARKING AREAS OR THE AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH RATE SHALL BE A MINIMUM OF 150 LBS./1,000 S.F. (3 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED.

THE CONTRACTOR SHALL INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

1. SOIL STOCKPILES

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR AT 150 LBS/1,000 S.F. (3 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOODWASTE EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKPILING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. ANY SOIL STOCKPILE SHALL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

2. NATURAL RESOURCE PROTECTION

ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED BY DECEMBER 1 AND ANCHORED WITH PLASTIC NETTING OR PROTECTED WITH EROSION CONTROL MATS. DURING WINTER CONSTRUCTION, A DOUBLE LINE OF SEDIMENT BARRIERS (I.E. SILT FENCE BACKED WITH HAY BALES OR EROSION CONTROL MIX) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. EXISTING PROJECTS NOT STABILIZED BY DECEMBER 1 SHALL BE PROTECTED WITH THE SECOND LINE OF SEDIMENT BARRIER TO ENSURE FUNCTIONALITY DURING THE SPRING THAW AND RAINS.

3. SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS SHALL CONSIST OF WOODWASTE FILTER BERMS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES AND SEDIMENT SILT FENCES.

4. MULCHING

AN AREA SHALL BE CONSIDERED DENUDED UNTIL AREAS OF FUTURE LOAM AND SEED HAVE BEEN LOAMED, SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE (TWICE THE NORMAL ACCEPTED RATE OF 75-LBS./1,000 S.F. OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE-INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1,000 SQUARE FEET (3 TONS/ACRE) AND ADEQUATELY ANCHORED THAT GROUND SURFACE IS NOT VISIBLE THOUGH THE MULCH.

BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY PEG LINE, MULCH NETTING, ASPHALT EMULSION CHEMICAL, OR WOOD CELLULOSE FIBER. WHEN GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH THEN COVER IS SUFFICIENT. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL BARE SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

5. MULCHING ON SLOPES AND DITCHES

SLOPES SHALL NOT BE LEFT EXPOSED FOR ANY EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY MULCHED AND ANCHORED WITH PEG AND NETTING OR WITH EROSION CONTROL BLANKETS. MULCHING SHALL BE APPLIED AT A RATE OF 230 LBS/1,000 S.F. ON ALL SLOPES GREATER THAN 8%

MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAT 8%. EROSION ANTROL BLANKETS SHALL BE USED IN LIEU OF MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 8%. EROSION CONTROL MIX CAN BE USED TO SUBSTITUTE EROSION CONTROL BLANKETS ON ALL SLOPES EXCEPT DITCHES.

6. SEEDING

BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PERMANENTLY SEEDED AND MULCH OR TEMPORARILY SEEDED AND MULCHED. SEEDING IS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. DORMANT SEEDING MAY BE SELECTED TO BE PLACED PRIOR TO THE PLACEMENT OF MULCH AND FABRIC NETTING ANCHORED WITH STAPLES. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

STANDARDS FOR TIMELY STABILIZATION OF CONSTRUCTION SITES DURING WNTER

1. STANDARD FOR THE TIMELY STABILIZATION OF DITCHES AND CHANNELS -- THE APPLICANT SHALL CONSTRUCT AND STABILIZE ALL STONE-LINED DITCHES AND CHANNELS ON THE SITE BY NOVEMBER 15. THE APPLICANT SHALL CONSTRUCT AND STABILIZE ALL GRASS-LINED DITCHES AND CHANNELS ON THE SITE BY SEPTEMBER 1. IF THE APPLICANT FAILS TO STABILIZE A DITCH OR CHANNEL TO BE GRASS-LINED BY SEPTEMBER 1, THEN THE APPLICANT WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE DITCH FOR LATE FALL AND WINTER.

INSTALL A SOD LINING IN THE DITCH -- THE APPLICANT SHALL LINE THE DITCH WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL, AND ANCHORING THE SOD WITH JUTE OR PLASTIC MESH TO PREVENT THE SOD STRIPS FROM SLOUGHING DURING FLOW CONDITIONS.

INSTALL A STONE LINING IN THE DITCH --THE APPLICANT SHALL LINE THE DITCH WITH STONE RIPRAP BY NOVEMBER 15. THE APPLICANT SHALL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE AND LINING THICKNESS NEEDED TO WITHSTAND THE ANTICIPATED FLOW VELOCITIES AND FLOW DEPTHS WITHIN THE DITCH. IF NECESSARY, THE APPLICANT SHALL REGRADE THE DITCH PRIOR TO PLACING THE STONE LINING SO TO PREVENT THE STONE LINING FROM REDUCING THE DITCH'S CROSS-SECTIONAL AREA.

2. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE APPLICANT SHALL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE APPLICANT SHALL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 1. THE DEPARTMENT SHALL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% TO BE A SLOPE. IF THE APPLICANT FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 1, THEN THE APPLICANT SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY SEPTEMBER 1 THE APPLICANT SHALL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE APPLICANT SHALL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT SHALL COVER THE SLOPE WITH A LAYER OF WOODWASTE COMPOST AS DESCRIBED IN ITEM III OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM IV OF THIS STANDARD.

STABILIZE THE SLOPE WITH SOD -- THE APPLICANT SHALL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY SEPTEMBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT SHALL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

STABILIZE THE SLOPE WITH WOODWASTE COMPOST -- THE APPLICANT SHALL PLACE A SIX-INCH LAYER OF WOODWASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOODWASTE COMPOST, THE APPLICANT SHALL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT SHALL NOT USE WOODWASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

STABILIZE THE SLOPE WITH STONE RIPRAP -- THE APPLICANT SHALL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT SHALL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

3. STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE APPLICANT SHALL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE APPLICANT FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE APPLICANT SHALL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY SEPTEMBER 1 THE APPLICANT SHALL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT SHALL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1, THEN THE APPLICANT SHALL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED BELOW.

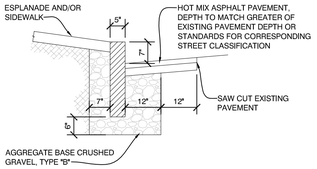
STABILIZE THE SOIL WITH SOD -- THE APPLICANT SHALL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY SEPTEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT SHALL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREAS SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT SHALL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

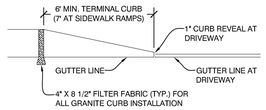
14.10 MAINTENANCE OF FACILITIES

THE STOR

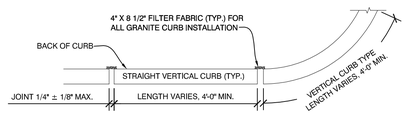
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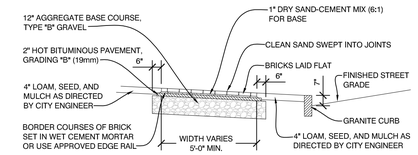
12 CURB INSTALLATION - CROSS SECTION (TYP.)
1/2" = 1'-0"



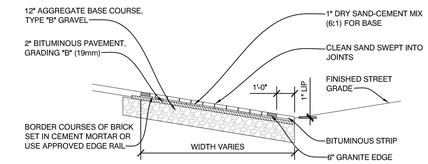
11 CURB INSTALLATION - TERMINAL CURB PROFILE
NOT TO SCALE



10 CURB INSTALLATION - PLAN
NOT TO SCALE



9 BRICK & PAVER SIDEWALK SECTION
1/4" = 1'-0"

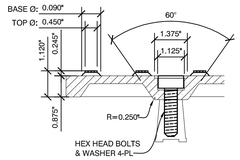


8 BRICK DRIVEWAY APRON SECTION
1/4" = 1'-0"

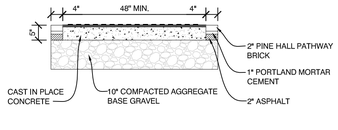
BRICKS TO BE USED:

NEW CONSTRUCTION:
4"X8" PINE HALL PATHWAY PAVER BRICK, MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM #193623, PINE HALL PATHWAY PAVER BRICK.

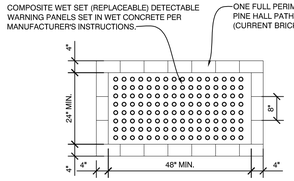
REPAIR/ MAINTENANCE TO EXISTING:
VERMONT PAVER; SUPPLIED BY GAGNE AND SONS, SPECIFICATION "VERMONT BACKER BRICK", ITEM #VBBB.



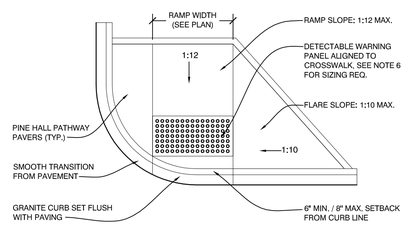
7 DETECTABLE WARNING STRIP - BOLT DETAIL
NOT TO SCALE



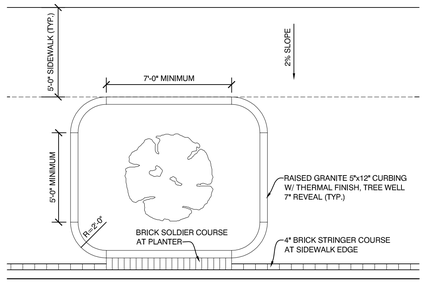
6 DETECTABLE WARNING STRIP - SECTION
1/2" = 1'-0"



5 DETECTABLE WARNING STRIP - PLAN
1/2" = 1'-0"



4 DETECTABLE WARNING STRIP - RAMP DETAIL
3/4" = 1'-0"



3 TREE WELL DETAIL
1/4" = 1'-0"

NOTES:

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 MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE CONCRETE SHALL BE SEALED PRIOR TO SETTING PANELS

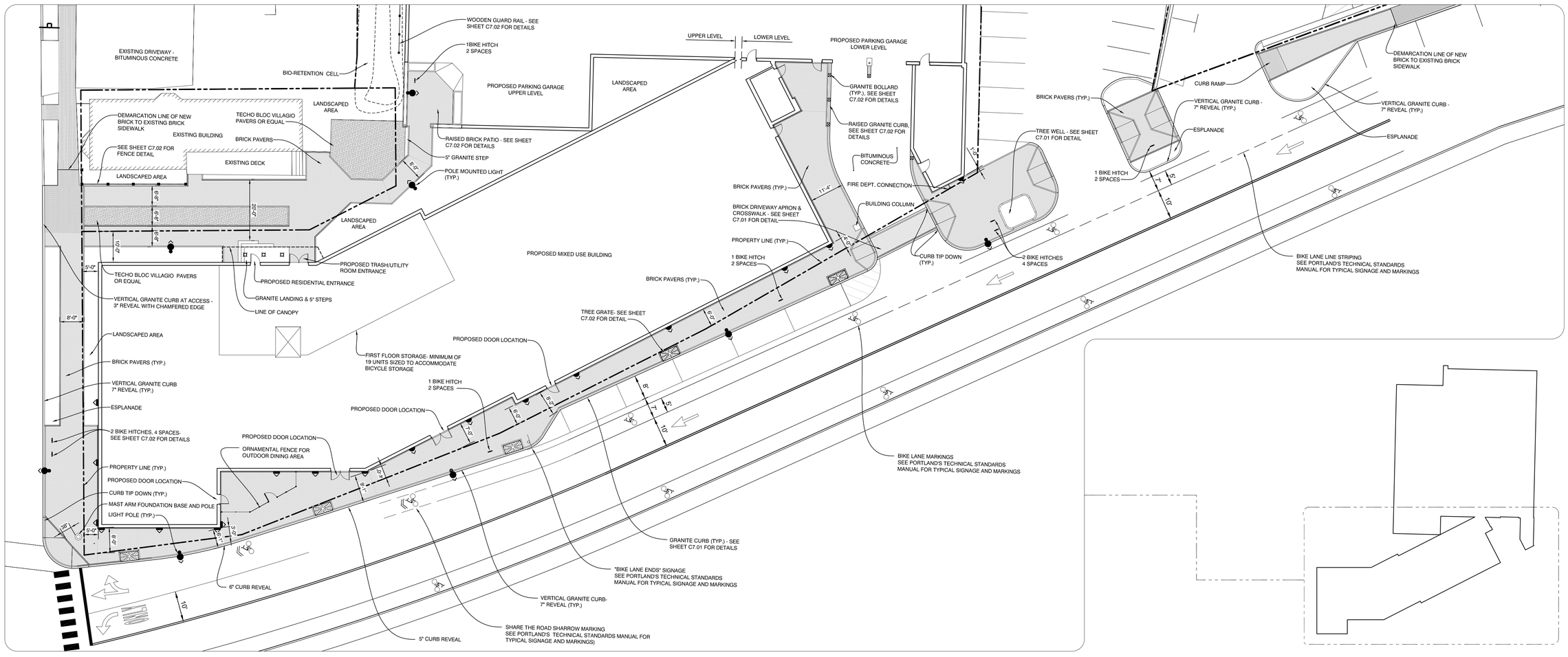
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. NO OTHER DETECTABLE WARNING DESIGN CONFIGURATION ALLOWED.

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. THE DETECTABLE WARNING PANEL SHALL HAVE ONE FULL COURSE OF PINE HALL PATHWAY PAVERS (THE CURRENT BRICK STANDARD) AROUND THE FULL PERIMETER OF THE PANEL. THIS PERIMETER COURSE SHALL BE SET USING PORTLAND MORTAR CEMENT TO CREATE A FLUSH SURFACE BETWEEN THE BRICK AND THE PANEL.

6.) SIZE: THE DETECTABLE WARNING PANEL(S) SHALL EXTEND 24" MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.

7. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" MINIMUM AND 8" MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



2 HARDSCAPE PLAN - MIXED USE
1/16" = 1'-0"

1 HARDSCAPE KEY PLAN
1/64" = 1'-0"

OPECHEE CONSTRUCTION CORPORATION
11 CORPORATE DRIVE ■ BELMONT, NH 03220
PH: (603) 524-3211 ■ FAX: (603) 524-8008 ■ WWW.OPECHEE.COM

Mixed Use Development

York & High Street
Portland, Maine

REVISION:
SITE REVIEW COMMENTS 11/16/15

ISSUED:
SITE PLAN REVIEW 08/14/15
SITE PLAN RESUBMISSION 11/17/15

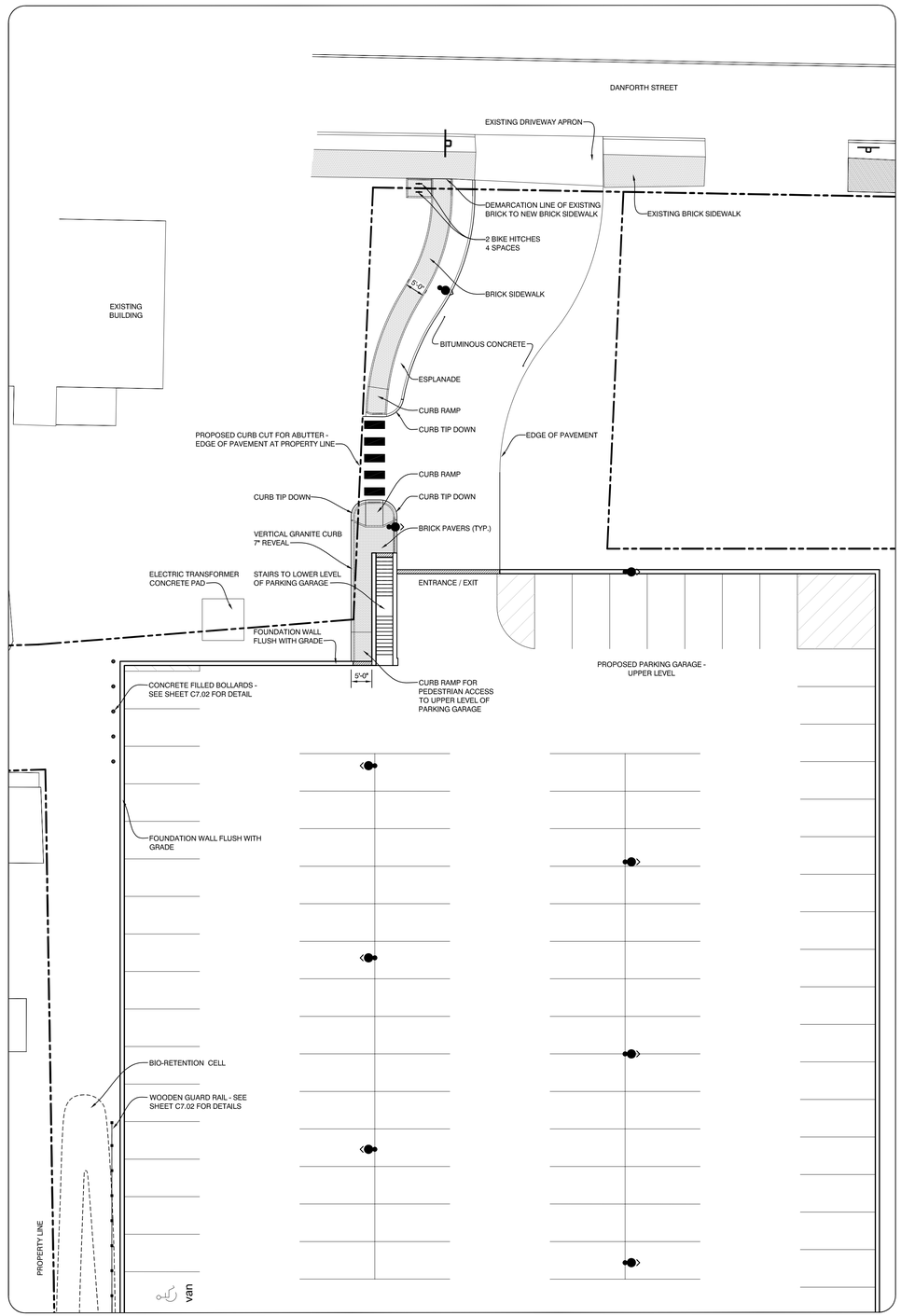
project architect: KAK
drawn by: CDR

HARDSCAPE PLAN & DETAILS

sheet number:
C7.01

Tuesday, November 17, 2015 11:11:22 AM

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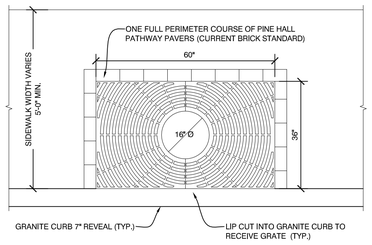


4 HARDSCAPE PLAN - PARKING GARAGE
1/16" = 1'-0"

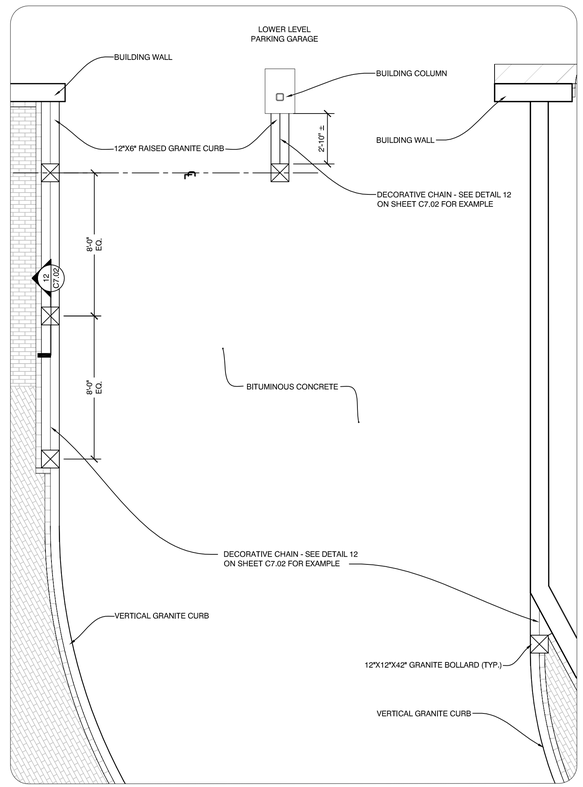
EXPANDABLE TREE GRATE, NEENAH FOUNDRY CO. MODEL R-8810:
16" Ø EXPANDABLE TREE OPENING. 025" SLOT OPENINGS. SEE SITE PLAN FOR SPECIFIC LOCATIONS.

SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

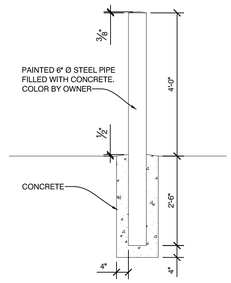
WHEN INSTALLED IN A BRICK SIDEWALK IT REQUIRES A FRAME TO BE INSTALLED TO HOLD THE GRATE IN PLACE.



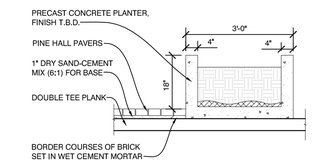
8 EXPANDABLE TREE GRATE - PLAN
1/2" = 1'-0"



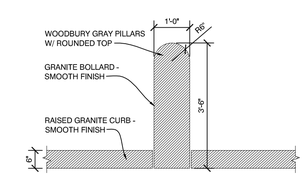
3 GRANITE BOLLARD - PLAN
1/4" = 1'-0"



11 CONCRETE BOLLARD - SECTION
1/2" = 1'-0"

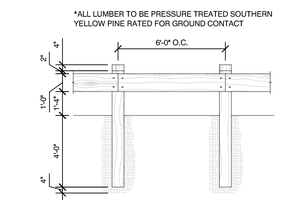


7 PATIO PLANTER - SECTION
1/2" = 1'-0"

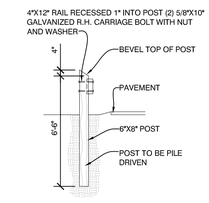




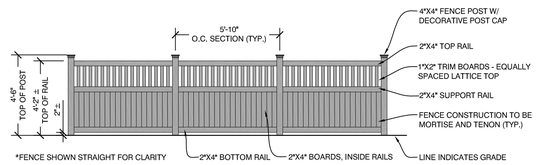
12 GRANITE BOLLARD - SECTION & EXAMPLE
1/2" = 1'-0"



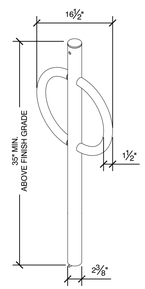
10 GUARDRAIL - ELEVATION
1/4" = 1'-0"



9 GUARDRAIL - SECTION
1/4" = 1'-0"



6 FENCE - ELEVATION
1/4" = 1'-0"



DERO BIKE HITCH - INSTALLATION:
IN-GROUND MOUNTED BIKE HITCH SHALL BE EMBEDDED INTO CONCRETE BASE.

PLACE STAKE IN POUR BED WHERE RACK SHALL SIT. SLIDE RACK END INTO STAKE TO ENSURE RACK REMAINS STRAIGHT WHILE CONCRETE IS POURED. VERIFY THAT RACK IS LEVEL AND SITS AT LEAST 35" ABOVE FINAL GRADE PRIOR TO POURING.

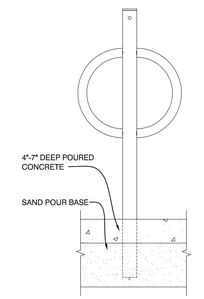
POUR CONCRETE AROUND RACK. DO NOT TOUCH RACK UNTIL CONCRETE HAS FULLY SET.

DERO BIKE HITCH - SETBACKS & CLEARANCES:
WALL SETBACKS - SET PARALLEL TO A WALL:
MINIMUM: 12"
RECOMMENDED: 24"

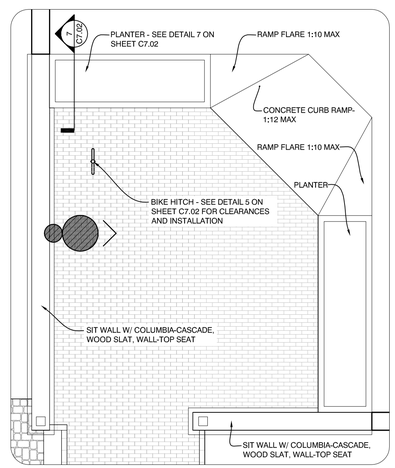
WALL SETBACKS - SET PERPENDICULAR TO A WALL:
MINIMUM: 35" (CENTERLINE)
RECOMMENDED: 38" OR 54" IF AISLE IS NEEDED BETWEEN BIKE AND WALL

DISTANCE BETWEEN RACKS:
MINIMUM: 24"
RECOMMENDED: 38"

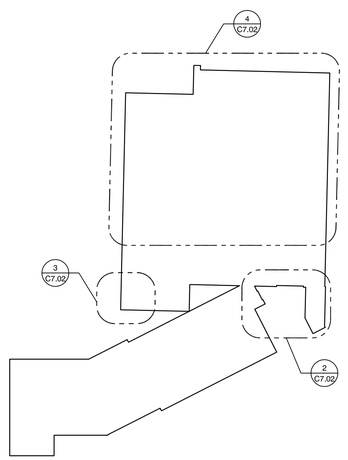
STREET SETBACK:
MINIMUM: 36"



5 BIKE HITCH - ELEVATION & SECTION
NOT TO SCALE



2 PATIO AT PARKING GARAGE - PLAN
1/4" = 1'-0"



1 HARDSCAPE KEY PLAN
1/64" = 1'-0"

OPECHEE CONSTRUCTION CORPORATION
11 CORPORATE DRIVE ■ BELMONT, NH 03220
PH (603) 524-3585 ■ FAX (603) 524-3586 ■ WWW.OPECHEE.COM

Mixed Use Development

York & High Street
Portland, Maine

REVISION:
SITE PLAN REVIEW COMMENTS 11/16/15

ISSUED:
SITE PLAN REVIEW 08/14/15
SITE PLAN RESUBMISSION 11/17/15

project architect: KAK
drawn by: CDR

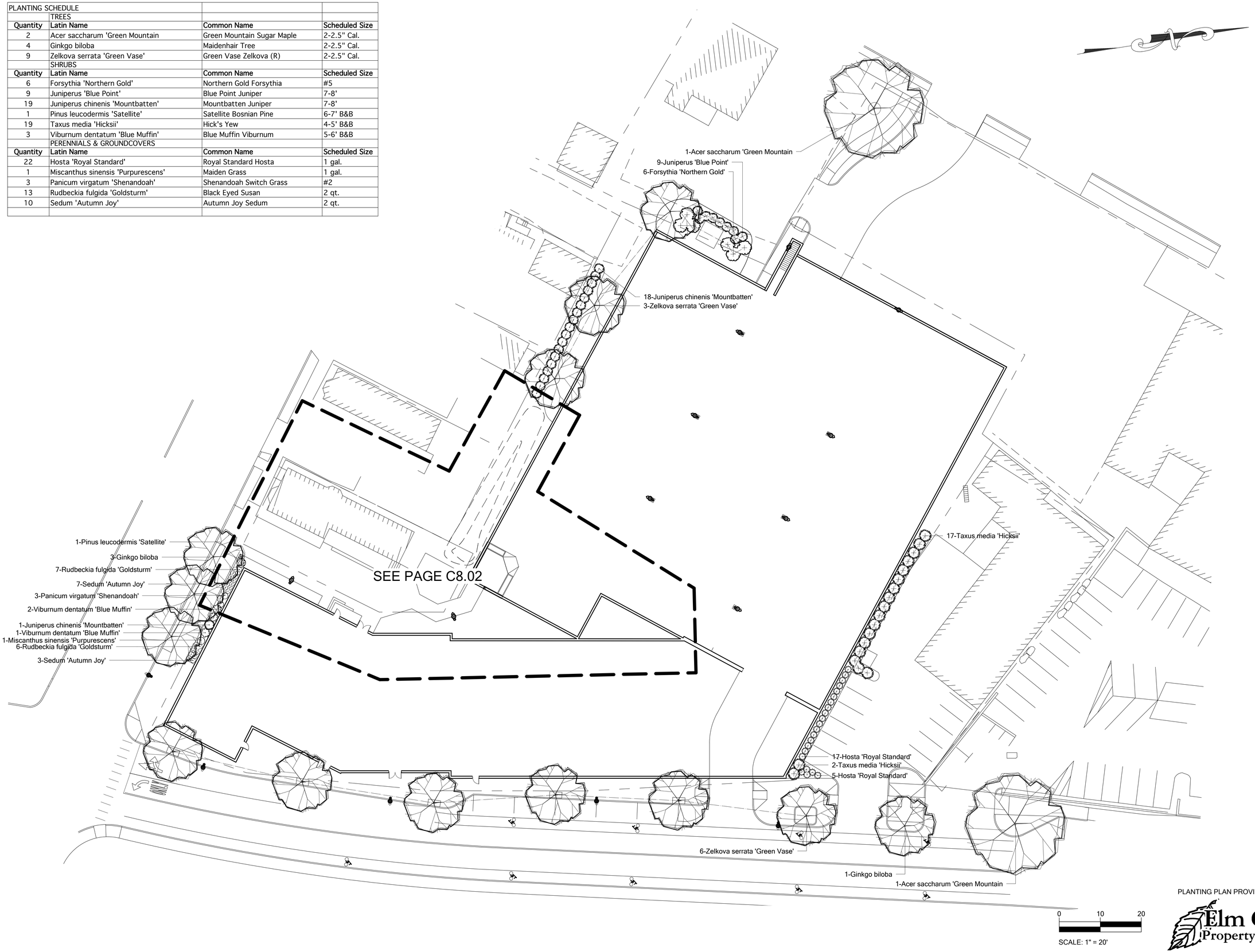
HARDSCAPE PLAN & DETAILS

sheet number:
C7.02

Tuesday, November 17, 2015 11:12:23 AM

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PLANTING SCHEDULE			
	TREES		
Quantity	**Latin Name**	**Common Name**	**Scheduled Size**
2	Acer saccharum 'Green Mountain	Green Mountain Sugar Maple	2-2.5" Cal.
4	Ginkgo biloba	Maidenhair Tree	2-2.5" Cal.
9	Zelkova serrata 'Green Vase'	Green Vase Zelkova (R)	2-2.5" Cal.
	SHRUBS		
Quantity	**Latin Name**	**Common Name**	**Scheduled Size**
6	Forsythia 'Northern Gold'	Northern Gold Forsythia	#5
9	Juniperus 'Blue Point'	Blue Point Juniper	7-8'
19	Juniperus chinenis 'Mountbatten'	Mountbatten Juniper	7-8'
1	Pinus leucodermis 'Satellite'	Satellite Bosnian Pine	6-7' B&B
19	Taxus media 'Hicksii'	Hick's Yew	4-5' B&B
3	Viburnum dentatum 'Blue Muffin'	Blue Muffin Viburnum	5-6' B&B
	PERENNIALS & GROUNDCOVERS		
Quantity	**Latin Name**	**Common Name**	**Scheduled Size**
22	Hosta 'Royal Standard'	Royal Standard Hosta	1 gal.
1	Miscanthus sinensis 'Purpurescens'	Maiden Grass	1 gal.
3	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	#2
13	Rudbeckia fulgida 'Goldsturm'	Black Eyed Susan	2 qt.
10	Sedum 'Autumn Joy'	Autumn Joy Sedum	2 qt.



0 10 20

SCALE: 1" = 20'

PLANTING PLAN PROVIDED BY:

Elm Grove Property Solutions LLC

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Mixed Use Development

York & High Street
Portland, Maine

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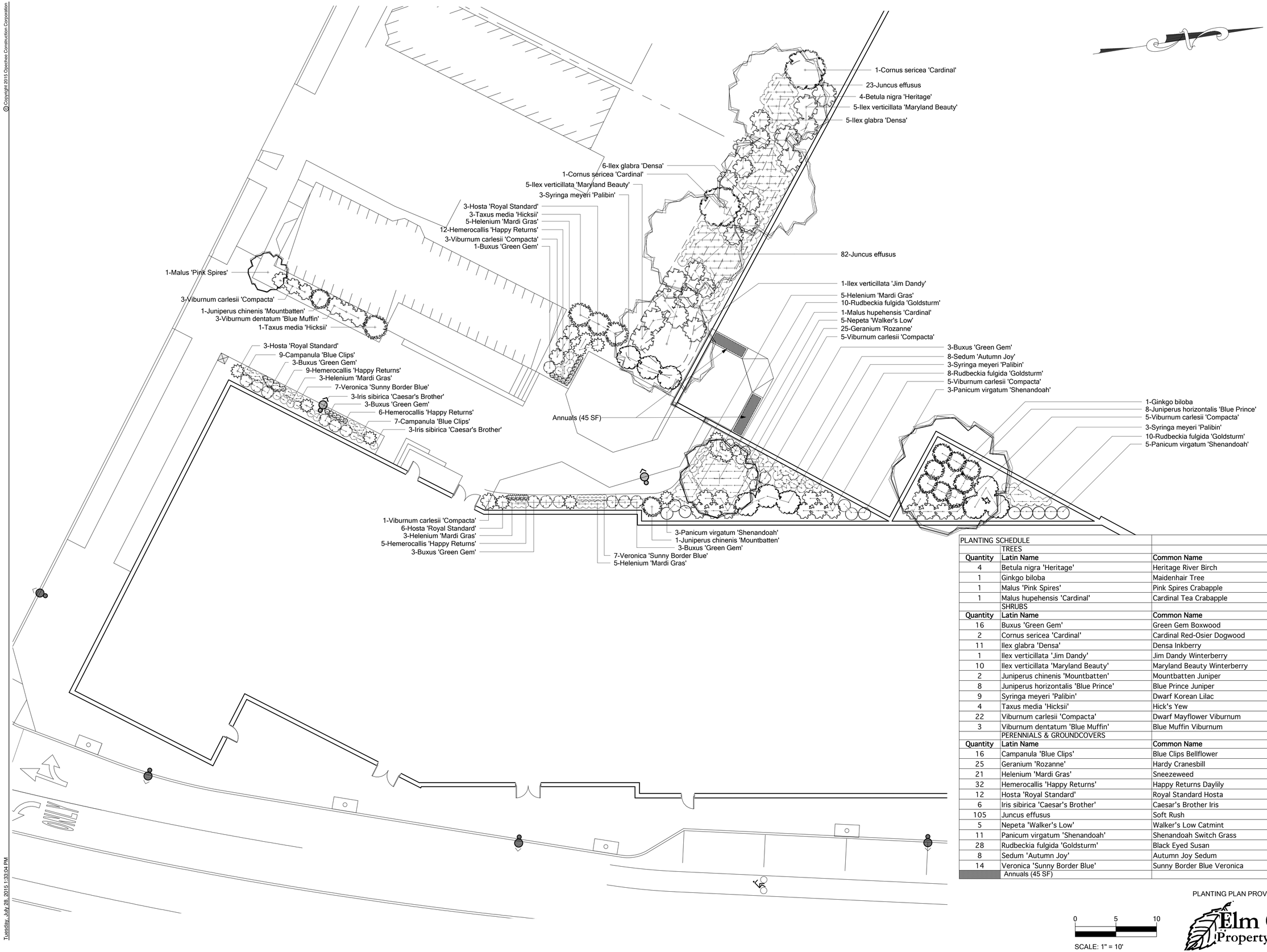
project architect: KS
drawn by: KS

LANDSCAPE PLAN & SCHEDULE

sheet number:
C7.03

Tuesday, July 28, 2015 1:32:07 PM

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PLANTING SCHEDULE			
	TREES		
Quantity	Latin Name	Common Name	Scheduled Size
4	Betula nigra 'Heritage'	Heritage River Birch	2-2.5" C.
1	Ginkgo biloba	Maidenhair Tree	2-2.5" Cal.
1	Malus 'Pink Spires'	Pink Spires Crabapple	2-2.5" Cal.
1	Malus hupehensis 'Cardinal'	Cardinal Tea Crabapple	2-2.5" Cal.
	SHRUBS		
Quantity	Latin Name	Common Name	Scheduled Size
16	Buxus 'Green Gem'	Green Gem Boxwood	2.5-3' B&B
2	Cornus sericea 'Cardinal'	Cardinal Red-Osier Dogwood	4-5' B&B
11	Ilex glabra 'Densa'	Densa Inkberry	#5
1	Ilex verticillata 'Jim Dandy'	Jim Dandy Winterberry	#5
10	Ilex verticillata 'Maryland Beauty'	Maryland Beauty Winterberry	4-5' B&B
2	Juniperus chinenis 'Mountbatten'	Mountbatten Juniper	7-8'
8	Juniperus horizontalis 'Blue Prince'	Blue Prince Juniper	#3
9	Syringa meyeri 'Palibin'	Dwarf Korean Lilac	4-5' B&B
4	Taxus media 'Hicksii'	Hick's Yew	4-5' B&B
22	Viburnum carlesii 'Compacta'	Dwarf Mayflower Viburnum	3-4' B&B
3	Viburnum dentatum 'Blue Muffin'	Blue Muffin Viburnum	5-6' B&B
	PERENNIALS & GROUNDCOVERS		
Quantity	Latin Name	Common Name	Scheduled Size
16	Campanula 'Blue Clips'	Blue Clips Bellflower	#1
25	Geranium 'Rozanne'	Hardy Cranesbill	#1
21	Helenium 'Mardi Gras'	Sneezeweed	#2
32	Hemerocallis 'Happy Returns'	Happy Returns Daylily	#1
12	Hosta 'Royal Standard'	Royal Standard Hosta	#1
6	Iris sibirica 'Caesar's Brother'	Caesar's Brother Iris	#1
105	Juncus effusus	Soft Rush	2 qt.
5	Nepeta 'Walker's Low'	Walker's Low Catmint	#1
11	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	#2
28	Rudbeckia fulgida 'Goldsturm'	Black Eyed Susan	#1
8	Sedum 'Autumn Joy'	Autumn Joy Sedum	#1
14	Veronica 'Sunny Border Blue'	Sunny Border Blue Veronica	#1
	Annuals (45 SF)		

PLANTING PLAN PROVIDED BY:

Elm Grove Property Solutions LLC

0 5 10

SCALE: 1" = 10'

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Mixed Use Development

York & High Street
Portland, Maine

REVISION:
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ISSUED:
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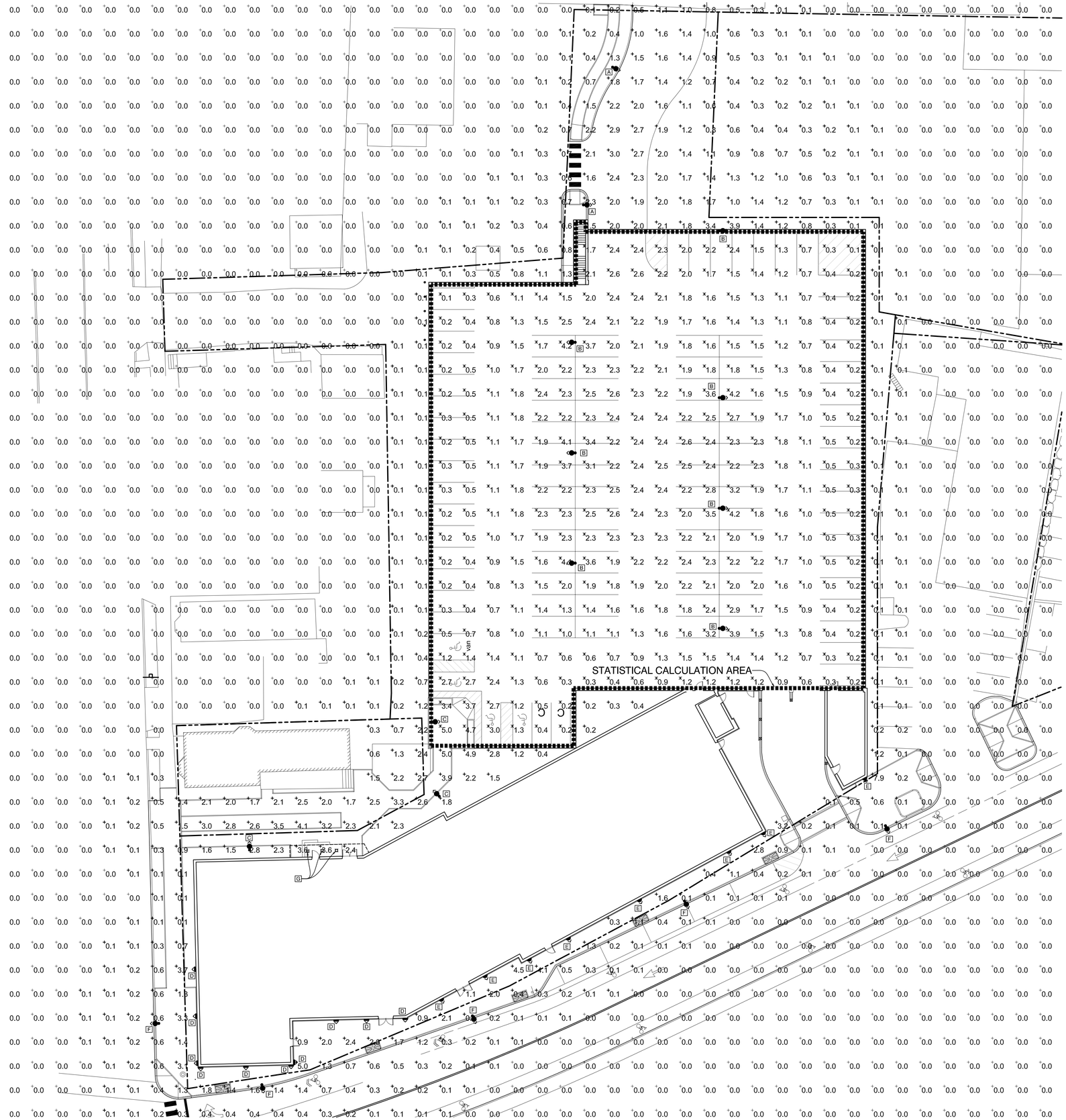
project architect: KS
drawn by: KS

LANDSCAPE DETAILS

sheet number:
C7.04

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LIGHT FIXTURE SCHEDULE

SYMBOL	TYPE	DESCRIPTION	MANUFACTURER / CATALOG NO.	LAMPS	MOUNTING
	A	DECORATIVE PENDANT LUMINAIRE WITH CONCAVE HOOD (FULL CUTOFF LIGHT)	US ARCHITECTURAL LIGHTING DSCP1-III-48VLED-NW-700mA-HS	ONE LED MODULE CONSISTING OF 48 LED'S, VERTICAL MOUNTED, 45 OPTICS WITH MOLDED BLACK PLASTIC HOUSE SIDE SHIELD, CLEAR FLAT GLASS LENS	POLE MOUNTED- 20' HEIGHT
	B	DECORATIVE PENDANT LUMINAIRE WITH CONCAVE HOOD (FULL CUTOFF LIGHT)	US ARCHITECTURAL LIGHTING DSCP1-VSQ-48VLED-NW-700mA-NW	ONE LED MODULE CONSISTING OF 48 LED'S, VERTICAL MOUNTED, CLEAR FLAT GLASS LENS	POLE MOUNTED- 20' HEIGHT
	C	DECORATIVE PENDANT LUMINAIRE WITH CONCAVE HOOD (FULL CUTOFF LIGHT)	US ARCHITECTURAL LIGHTING DSCP1-IV-48VLED-NW-700mA-HS	ONE LED MODULE CONSISTING OF 48 LED'S, VERTICAL MOUNTED, 45 OPTICS WITH MOLDED BLACK PLASTIC HOUSE SIDE SHIELD, CLEAR FLAT GLASS LENS	POLE MOUNTED- 14' HEIGHT
	D	CAST ALUMINUM SURFACE MOUNT WALL SCONCE (LIGHT DIRECTED DOWNWARD)	LUMINIS NT802-L1W12R1	ONE BRIDGELUX BXRC-40E4000-F ROUND LED ARRAY, WHITE 12W SSL C/W THOMAS RESEARCH DRIVER DV30C700D @120V	BUILDING MOUNTED- 7'-0" TO CENTER
	E	CAST ALUMINUM WALL SCONCE W/ TOP REFLECTOR (LIGHT DIRECTED DOWNWARD)	CAMBER CBR2-100MH	ONE 100W ED17 CLEAR METAL HALIDE LAMP	BUILDING MOUNTED- 7'-0" TO CENTER
	F	CITY OF PORTLAND EASTERN WATERFRONT DISTRICT MEDIUM POLE MOUNTED LIGHT FABRICATED METAL HOUSING	HOLOPHANE LIGHTING ESU 175PM MA CMC 45-64319	ONE 175W CLEAR METAL HALIDE LAMP, VERTICAL MOUNTED.	POLE MOUNTED- SEE DETAIL ON SHEET C8.02
	G	6" RECESSED DOWN LIGHT	PHILIPS 1101LED09N271	6" RECESSED LED DOWN LIGHT, 2700K, FALL RIVER LIGHT ENGINE, W/ 1105 BLACK TRIM	CANOPY RECESSED - 10'-0" HEIGHT

NOTES:
1.) LIGHTING CALCULATIONS REPRESENT HORIZONTAL MAINTAINED ILLUMINANCE LEVELS (FOOTCANDLES) MEASURED AT GRADE ON A 10'x10' GRID. CITY STREET LIGHTS ARE NOT INCLUDED IN THE LIGHTING CALCULATIONS

2.) CALCULATED GRID STATISTICS ARE AS FOLLOWS:
AVG: ≤1.5 fc MIN: 0.2 fc MAX: 5.0 fc MAX/MIN: ≤20:1

3.) STATISTICAL CALCULATION POINTS ARE DELINEATED WITH *

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Mixed Use Development

York & High Street
Portland, Maine

REVISION:
SITE PLAN REVIEW COMMENTS 11/16/15

ISSUED:
SITE PLAN REVIEW 08/14/15
SITE PLAN RESUBMISSION 11/17/15

project architect: KAK
drawn by: CDR

LIGHTING & PHOTOMETRICS PLAN

sheet number:
C8.01

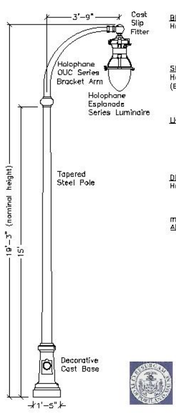
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York & High Street (Municipal Lighting)

City of Portland Technical Manual

Section 10 - Municipal Street Lighting
Adopted 7/19/10



LUMINAIRE
Holophane Lighting model ESU175MH124-R
Luminaire shall be furnished and installed by The Central Maine Power Company under the municipal lease agreement for street lighting.
Luminaire shall be manufacturer's standard black color.

LAMP
Holophane Lighting model S-M175/U 64471
Vertical mounted, 175 watt mogul base clear metal halide lamp.

BRACKET ARM
Holophane Lighting model OUC 6063-T8
Aluminum crossarm with a post-top fitting for a 3-1/2" by 8" tenon.
Bracket arm shall be manufacturer's standard black color.

SLIP FITTER
Holophane Lighting model BHLF200-SCA/AS (Boston Harbor Series)
2-3/8" O.D. with swivel cast fitter.
Slip fitter shall be manufacturer's standard black color.

LIGHTING POLE
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 manufacturer's standard black color.

DECORATIVE POLE BASE
Holophane Lighting model Cambridge Series
Decorative clamshell cast aluminum base.
Hardware shall be stainless steel.
Decorative pole base shall be manufacturer's standard black color.

APPLICATION
Street/Sidewalk lighting for two-way streets with parking on one sides, or one-way streets.
Suggested layout:
80–100 ft on center (one side only)
150–200 ft on center (staggered pattern both sides)

City of Portland, Maine
Street & Sidewalk Lighting
WATERFRONT COMMERCIAL DISTRICT
Medium Scale Lighting Pole
69/25/07

DATE: AUGUST 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	MUNICIPAL STREET LIGHTING STANDARDS SECTION X	FIGURE: X-5C
REVISED:	EASTERN WATERFRONT DISTRICT MEDIUM SCALE LIGHTING POLE		

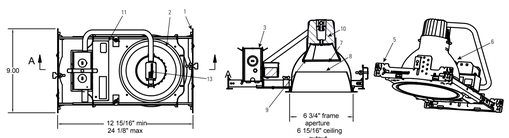
245

Residential Entrance Canopy Lighting (Full Cut-Off Site Lighting)

1101LED Uniframe LED 6 3/4"

Downlight, New construction, Non-IC Frame-In Kit

Dimensions



Features

1. **Mounting frame:** .036" (#20ga.) Galvanized Steel. Accommodates all ceilings up to 1-1/2" thick.
2. **Trim clips:** "Push in/twist out" stainless steel clips hold reflector flush to ceiling.
3. **Junction box:** 2" x 4" x 3-1/2" (22cu. in.) .032" (#22ga.) galvanized steel. UL Listed for maximum of 8 (#12ga.) through branch circuit conductors.
4. **Uniframe mounting system – grid ceiling:** Tool free mounting in grid ceilings. .036" (20ga.) Galvanized Steel interlocking slide bars adjust to 24-1/8" long accommodating 24" O.C. Ceiling Grid. Adjustable speed clamps for positive attachment to grid ceiling systems.
5. **Uniframe mounting system – wood joist ceiling:** Integral nailing tabs, alignment guides, fastener holes and bendable strapping guides for wood joist installation. Galvanized Steel interlocking slide bars adjust from 12-15/16" to 24-1/8" long to accommodate 16" and 24" O.C. joist spacing, with or without strapping.
6. **Reflector:** See individual specification sheets for information.
7. **Optical mixing chamber:** Designed to provide a spacing ratio of .9 (60° beam) when installed in standard Lytecaster trims. Optic design provides less glare than standard PAR lamps.
8. **Lens:** Solite Glass lens has high transmission value with slight texturing to provide a smooth consistent beam distribution.
9. **Led board:** Utilizes Philips Lumileds LED's.
10. **Thermal management:** Proprietary heat sink was developed using the latest in Computational Fluid Dynamics Software. This optimized thermal design provides an expected lifetime of 50,000 hours. Cast aluminum heat sink is coated with a RoHS compliant coating (trivalent chromate) to resist corrosion in damp/wet environments.
11. **Power supply/enclosure:** Factory wired electronic LED driver (see Electrical section for specifications) Enclosed in a 22ga. galvanized steel housing.
12. **Thermal protector:** Meets NEC and UL requirements. Do not install insulation above or within 3" (76mm) of any part of the luminaire.
13. **Top heat sink cover:** Tool free snap on enclosure bracket .22-ga component houses the driver secondary tool free wire connector.

Electrical

Electronic power supply: RoHS compliant Class 2 power unit for use in a damp or dry location (Outdoor Type1 IP66). Class A sound rated unit tolerates sustained open circuit and short circuit output conditions without damage. Complies with FCC rules per Title 47 CFR Part 15 Non-Consumer (Class A) for EMI/RFI (conducted and radiated) at full load. Dimming (0-10V) version intended for use with 0-10V DC type dimmers. See www.advance philips. com for latest dimming switch compatibility.

Input voltage	Input Freq.	Max. Input Current	Max. Input Power	Max THD	Power Factor	Min. Temp. Operating	Dimming Signal
120v	50/60Hz	0.14A	17W	< 20%	> .9	-20° C	N/A
120v dim	50/60Hz	0.14A	17W	< 20%	> .9	-20° C	0-10v
277v	50/60Hz	0.07A	17W	< 20%	> .9	-20° C	N/A
277v dim	50/60Hz	0.07A	17W	< 20%	> .9	-20° C	0-10v

Accessories

1967A: Extra thick ceiling adapter (2" thick)
L56WWLENS: Spread lens for use with wall wash trims to provide even vertical illumination.

Labels

cULus listed, suitable for damp locations.
UL wet location classified.
ENERGY STAR® certified.
Title 24 compliant.
5 year warranty.
I.B.E.W.

Downward light per architectural lighting standards

Buff Brick Wall Sconce (Architectural Lighting)

NAUTILUX
WALL/SEMI-RECESSED

NT800/NT805/NT825 - HID NT802/NT804/NT812 - LED



luminis.com
| 197

DATA

MATERIALS
Nautilux is made of corrosion resistant 356 aluminum alloy with a copper (CU) content of less than 0.1%. The borosilicate thermal shock frosted glass is designed to be used as a full diffuser or coupled with a selection of multiple cast aluminum front blades.
HID: Lamp is positioned horizontally and combined with a specular aluminum reflector with down light concentration maintains a general uniform light over the glass diffuser.
LED platform is easily positioned to produce downward light while glass diffuser remains illuminated. LED module is easily removable and secured with a heat dissipating plate for optimal light performance.

ELECTRICAL
HIGH INTENSITY DISCHARGE (H.I.D)
BALLAST Electronic universal voltage (120V-277V (347V on request) and a power factor greater than 90%. End of life protection with a minimum starting temperature of -20°C/-4°F.
SOCKET G12 base pulse rated 4KV porcelain body with a nickel plated screw shell and a center contact rated 600V. Supplied with 200°C leads.

LED
DRIVER Standard 0-10V dimming ready. 120/277V multi volt (50-60HZ) with a minimum starting temperature of -30°C/-22°F. Output over voltage, output over current and output short circuit protection with auto-recovery. Over temperature protection (110°C).
LED Standard 4000°K LED platform included. Optional 3000°K and 3500°K. Removable modular LED platform.

LIFE
51,000hrs L_{77} B_{50} (based on IESNA TM-21 Test Method and LM-80 data).
68,000hrs L_{70} B_{50} (calculated projection from LM-80 data).

FINISH
Five-stage preparation process including preheating of cast aluminum parts for air extraction, an environmentally friendly alloy sealant. Polyester powder coating is applied through an electrostatic process and oven cured for long term finish.

MOUNTING
Maximum weight: 18lbs (8.2kg)
Mounts on a standard 4" (102) octagonal electrical box with 3 1/2" C/C (.89) mounting holes.

CERTIFICATION
Tested to UL1598 and CSA 22.2 #250. ETL listed wet location.
Photometry tested per IES LM-79-08 / IES LM80 test report.
Rated IP65.

LUMINAIRE SELECTION

	LED (4000°K, CRI 80)		
INPUT WATTS	12W	18W	30W
DELIVERED LUMENS	588	880	1380
SUFFIX	LW12	LW18	LW30
NT802	•	•	•
NT802R	•	•	•
NT804	•	•	•
NT804R	•	•	•
NT812	•	•	•
NT812R	•	•	•

	METAL HALIDE		
SOURCE	39W T6/G12	50W T6/G12	70W T6/G12
SUFFIX	MS39	MS50	MS70
NT800	•	•	•
NT800R	•	•	
NT805	•	•	•
NT805R	•	•	
NT825	•	•	•
NT825R	•	•	

NOTE • indicates selection is standard and available. Updated specification sheets and IES files are available on luminis.com.

OPTIONS (See page 200)

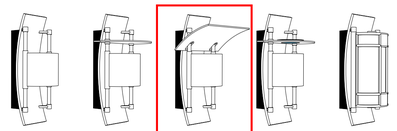
NAUTILUX
196 |
LUMINIS | NAUTILUX

Dark & Red Brick Wall Sconces (Architectural Lighting)

CAMBER™ ORDERING INFORMATION

Ordering Example
CBR4 / 70PSMH120 / RAL-9005 / CF15 / EE
Fixture 1 | Electrical Mode 2 | Finish 3 | Option 4 | Option 5

1. FIXTURE



2. ELECTRICAL MODE

	EXAMPLE LAMP WATTS 100	LAMP TYPE PSMH	LINE VOLTS 277
PULSE START METAL HALIDE			
50PSMH120 50PSMH277	70PSMH120 70PSMH208 70PSMH240 70PSMH277 70PSMH347	70PSMH120T6 70PSMH208T6 70PSMH240T6 70PSMH277T6	100PSMH120 100PSMH208 100PSMH240 100PSMH277 100PSMH347
HIGH PRESSURE SODIUM			
50HPS120	70HPS120		100HPS120
COMPACT FLUORESCENT			
42PL120 42PL208 42PL240 42PL277	NOTE: 42W, 32W and 26W lamps use the same ballast. **PRODUCT IS AVAILABLE IN LED - CONSULT FACTORY.**		

3. FINISH

Electrostatically applied TGIC powder coating features a multi-step finishing process to produce a durable weather resistant finish.

COLOR	TEXTURED	SMOOTH
BLACK	RAL-9005-T	RAL-9005
WHITE	RAL-9003-T	RAL-9003
GREY	RAL-7004-T	RAL-7004
DARK BRONZE	RAL-8019-T	RAL-8019
GREEN	RAL-6005-T	RAL-6005

NOTE: Other colors available. (Refer to www.usaltg.com/RAL-Colors.html)

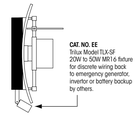
4. COLOR FILTERS FOR CBR4

Color Filters are for accent color on building overhangs, reliefs and projections.

CLEAR	CFC
DEEP STRAW 15	CF15
MEDIUM RED 27	CF27
BRILLIANT BLUE 69	CF69
PRIMARY GREEN 91	CF91

NOTE: Other colors available.

5. OPTIONAL EMERGENCY EGRESS

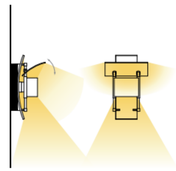


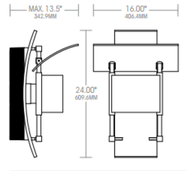
CAT. NO. EE
Trilux Model TLX-SF
20W to 50W MR16 fixture for discrete wiring back to emergency generator, inverter or battery backup by others.

www.usaltg.com
U.S.ARCHITECTURAL LTG.

CBR3



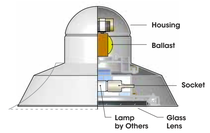


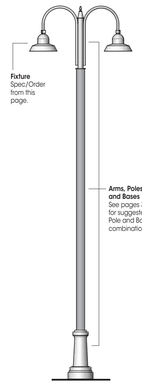


www.usaltg.com

Pole Mounted Decorative Lighting (Full Cut-Off Site Lighting)

DSCP/DSTP Fixture Specifications and Ordering





Housing – (For up to 175W) – Ballast housing is spun from .080" aluminum. Internal ballast support bracket also functions as mounting reinforcement plate and has a minimum thickness of .125". **(For 250W & above) –** Ballast housing is cast from low copper (A356, < 0.2%) aluminum alloy, minimum .125" wall thickness. Optical housing is spun from .080" aluminum, hemmed at the edges. Lens frame is a one-piece .060" aluminum spinning surrounding a 3/16" tempered glass lens sealed with a continuous silicone gasket and attaches to the housing with the Acuvinge™ hinging mechanism. A captive stainless steel thumbscrew allows for tool less entry to the optical compartment which is sealed with a closed cell E.P.D.M. gasket.

Mounting – When pendant mounted, the fixture housing is connected to the mounting arm by the Trulevel swivel which is internally welded to the housing and allows for fixture leveling prior to locking the swivel. When side arm mounted, the housing is externally welded to the mounting arm and the weld is blended to produce a smooth, continuous joint.

Optics – Refer to page 62 for Optical System Specification.

Electrical Components – Refer to page 62 for Electrical Components Specification.

Finish – Electro-statically applied TGIC Polyester Powder Coat on substrate prepared with 20psi power wash at 140°F All castings are shot blasted to provide a uniform surface prior to power wash and paint. A four step iron phosphate pretreatment for protection and paint adhesion is utilized. 400°F bake for maximum hardness and durability.

Spec/Order Example: DSTP1 / 150TP5MH277E/HR-III / 1 / RAL6005

MODEL	LAMP/BALLAST MODE	OPTICS	MOUNTING	FINISH	OPTIONS
☐ DSCP25	WATTS TYPE VOLTS STANDARD MAGNETIC BALLAST ☐ 250 [4] ☐ PSMH ☐ 120 ☐ 175 ☐ HPS ☐ 208 ☐ 150T [1] ☐ 240 ☐ 150 ☐ 277 ☐ 100 ☐ 347 (CAN) ☐ 64LED [3] ☐ 480 ☐ 80LED [3] ☐ 120LED [3] ☐ E [1] (ELECTRONIC)	HORIZONTAL SEGMENTED REFLECTORS ☐ TYPE I I HR-II ☐ TYPE I I I HR-III. ☐ TYPE I V HR-I V ☐ FORWARD THROW (HOUSE SIDE CUTOFF) HR-FT-HSC ☐ TYPE V SQUARE HR-V-SQ. VERTICAL SEGMENTED REFLECTORS ☐ ASYMMETRIC VR-A-SY. ☐ SYMMETRIC VR-V-SQ.	ARM MOUNT ☐ 1 ☐ 2-180 ☐ 3-120 ☐ 4-90 WALL MOUNT ☐ WM	STANDARD TEXTURED FINISH ☐ BLACK RAL-9005-T ☐ WHITE RAL-9003-T ☐ GREY RAL-7004-T ☐ DARK BRONZE RAL-8019-T ☐ GREEN RAL-6005-T FOR SMOOTH FINISH REMOVE SUFFIX -T (EXAMPLE: RAL-9005) CONSULT FACTORY FOR CUSTOM COLORS	☐ CONVEX GLASS LENS. . . . DG ☐ CLEAR CONVEX LENS - ACRYLIC (175W MAX.) . . . . . CA ☐ CLEAR CONVEX LENS - POLYCARBONATE (150W MAX.) CP ☐ OPAL CONVEX LENS - ACRYLIC (175W MAX.) . . . . . WA ☐ OPAL CONVEX LENS - POLYCARBONATE (150W MAX.) WP ☐ 3/4" IPS STEM MOUNT AND SWIVEL CANOPY (#10 MAX.) . . . . . SM ☐ CHAIN MOUNTED (#10 MAX.) . . . . . CM ☐ HOUSE SIDE SHIELD . . . . . HS ☐ PHOTO CELL + VLOTAGE (EXAMPLE: PC120V) . . . PC+V ☐ SINGLE FUSE (120V, 277V) . . . . . SF ☐ DOUBLE FUSE (208V, 240V) . . . . . DF
☐ DSTP25					
☒ DSCP1					
☐ DSTP1					

1 – 50-TW/BU (ET ONLY)
3 – EIO BASE
4 – POSITION SENSITIVE LAMP
CONSULT FACTORY FOR OTHER BALLAST CONFIGURATIONS AND LAMP OPTIONS

Tuesday, November 17, 2015 11:15:21 AM

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Mixed Use Development

York & High Street
Portland, Maine

REVISION:
SITE PLAN REVIEW COMMENTS 11/16/15
. . .

ISSUED:
SITE PLAN REVIEW 08/14/15
SITE PLAN RESUBMISSION 11/17/15
. . .

project architect: KAK
drawn by: CDR

LIGHTING SPECIFICATIONS

sheet number:
C8.02

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PLAN NORTH

1 LOWER LEVEL FLOOR PLAN
3/32" = 1'-0"



sheet number: C9.03

LOWER LEVEL FLOOR PLAN

project architect: KAK
drawn by: JJD

ISSUED:

08/14/15 SITE PLAN REVIEW
11/17/15 PLANNING BOARD SUBMISSION
.
.

REVISION:

11/16/15 PER DESIGN REVIEW
.
.
.

Mixed Use Development

York & High Street
Portland, Maine

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PLAN NORTH

1 SECOND LEVEL FLOOR PLAN
3/32" = 1'-0"

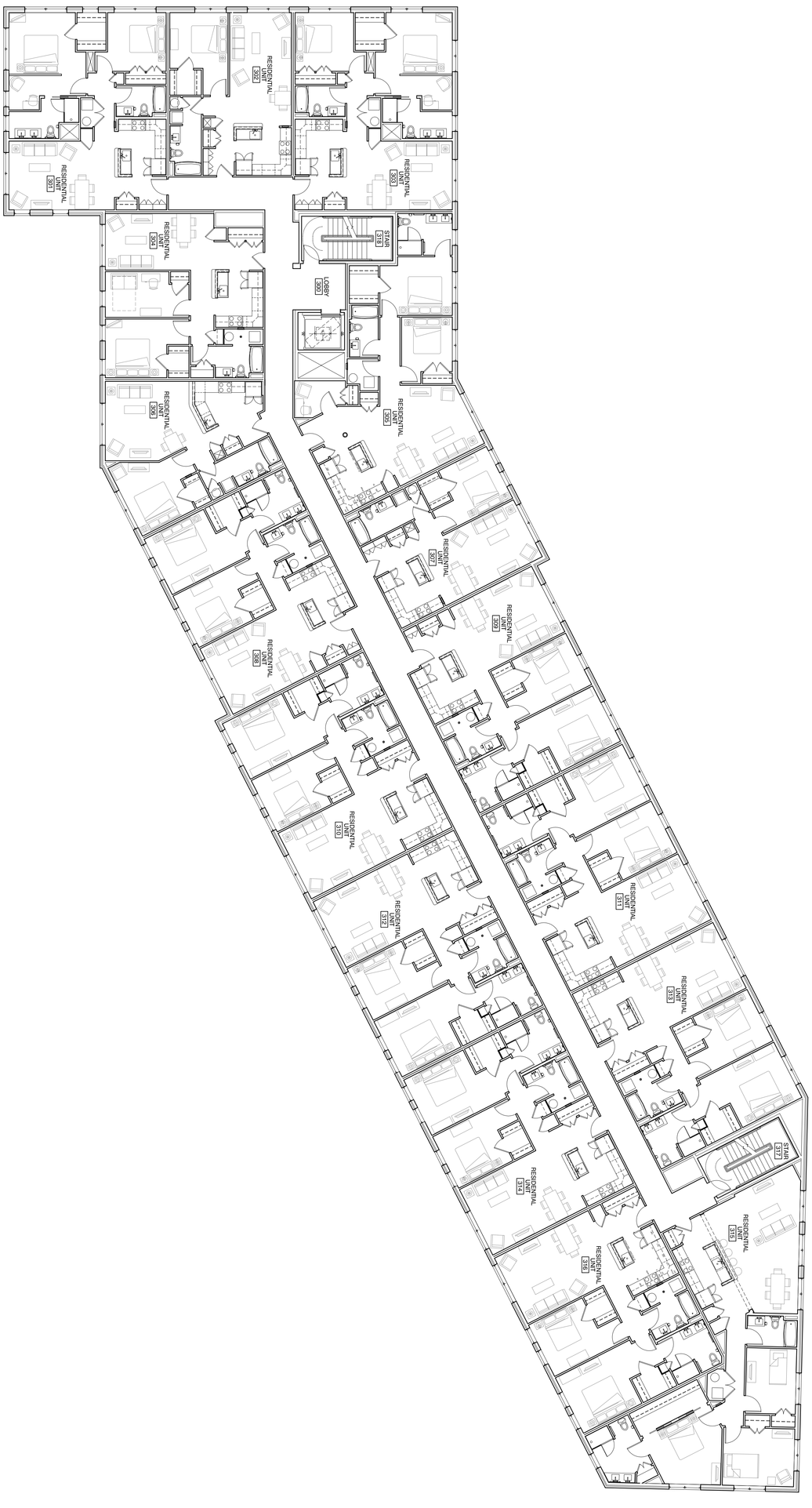


sheet number: C9.04	SECOND LEVEL FLOOR PLAN	project architect: KAK drawn by: JJD	ISSUED: 08/14/15 SITE PLAN REVIEW 11/17/15 PLANNING BOARD SUBMISSION . .	REVISION: 11/16/15 PER DESIGN REVIEW . . .	Mixed Use Development York & High Street Portland, Maine		OPECHEE CONSTRUCTION CORPORATION 11 CORPORATE DRIVE ■ BELMONT ■ NH 03220 PHONE (603) 527-9090 ■ WWW.OPECHEE.COM

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PLAN NORTH

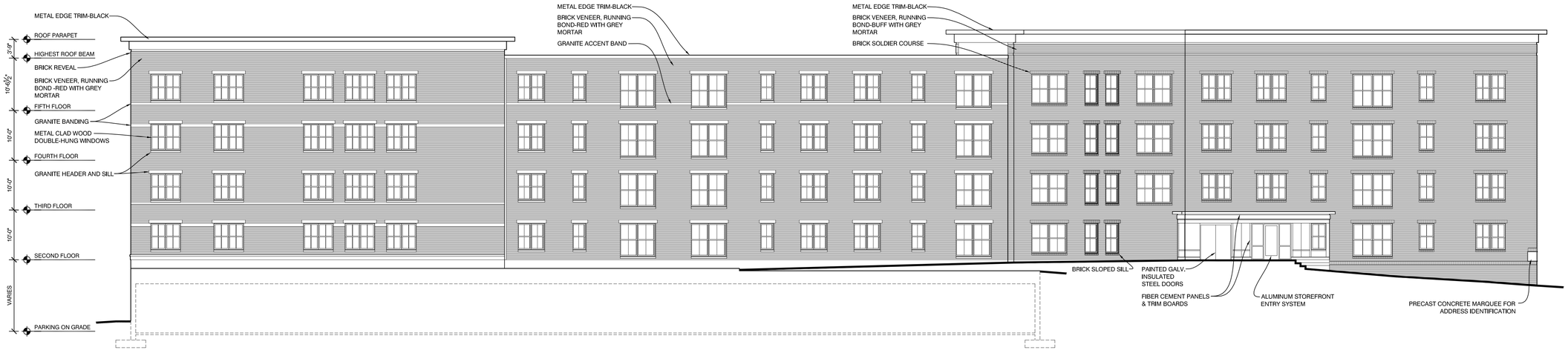
1 THIRD LEVEL FLOOR PLAN
3/32" = 1'-0"



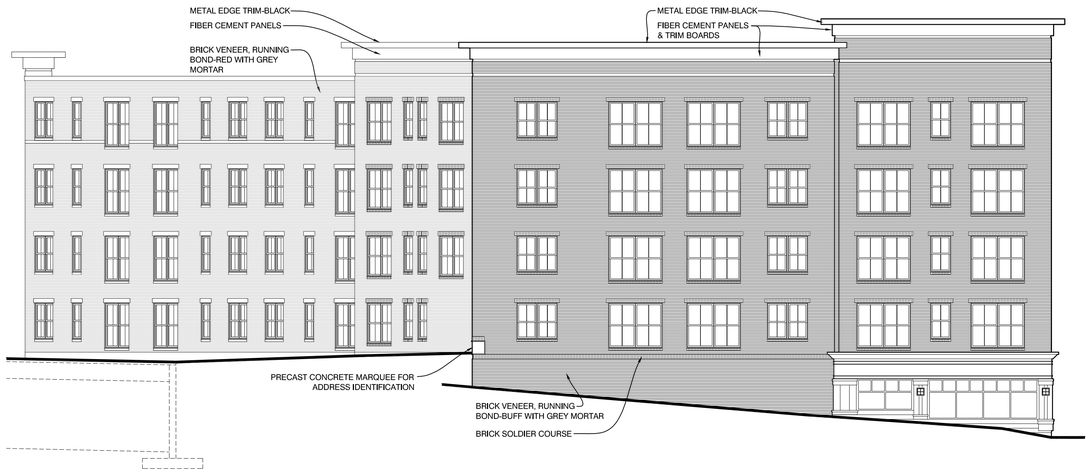
sheet number: C9.05	THIRD LEVEL FLOOR PLAN	project architect: KAK drawn by: JJD	ISSUED: 08/14/15 SITE PLAN REVIEW 11/17/15 PLANNING BOARD SUBMISSION . .	REVISION: 11/16/15 PER DESIGN REVIEW . . .	Mixed Use Development York & High Street Portland, Maine

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4 PARKING DECK EXTERIOR ELEVATION
3/32" = 1'-0"



3 HIGH STREET EXTERIOR ELEVATION
3/32" = 1'-0"



2 SIDE YORK STREET EXTERIOR ELEVATION
3/32" = 1'-0"



1 YORK STREET EXTERIOR ELEVATION
3/32" = 1'-0"

ELEVATION KEY PLAN

Tuesday, November 17, 2015 1:36:41 PM

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Mixed Use Development

York & High Street
Portland, Maine

REVISION:
11/16/15 PER DESIGN REVIEW

ISSUED:
08/14/15 SITE PLAN REVIEW
11/17/15 PLANNING BOARD SUBMISSION

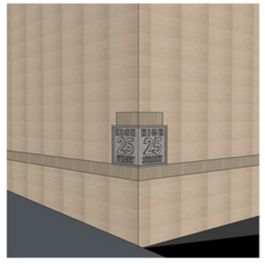
project architect: KAK
drawn by: JJD

EXTERIOR BUILDING ELEVATIONS

sheet number:
C9.01



YORK STREET ELEVATION





HIGH STREET ADDRESS IDENTIFICATION



YORK STREET ELEVATION

EXTERIOR ELEVATIONS

November 17, 2015

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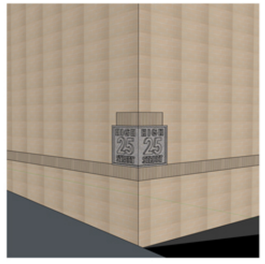
York Street Development

Portland, Maine

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YORK STREET ELEVATION





HIGH STREET ADDRESS IDENTIFICATION



YORK STREET ELEVATION

EXTERIOR ELEVATIONS

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SIDE ELEVATION



ELEVATION AT PARKING AND MAIN BUILDING ENTRY

EXTERIOR ELEVATIONS

November 17, 2015

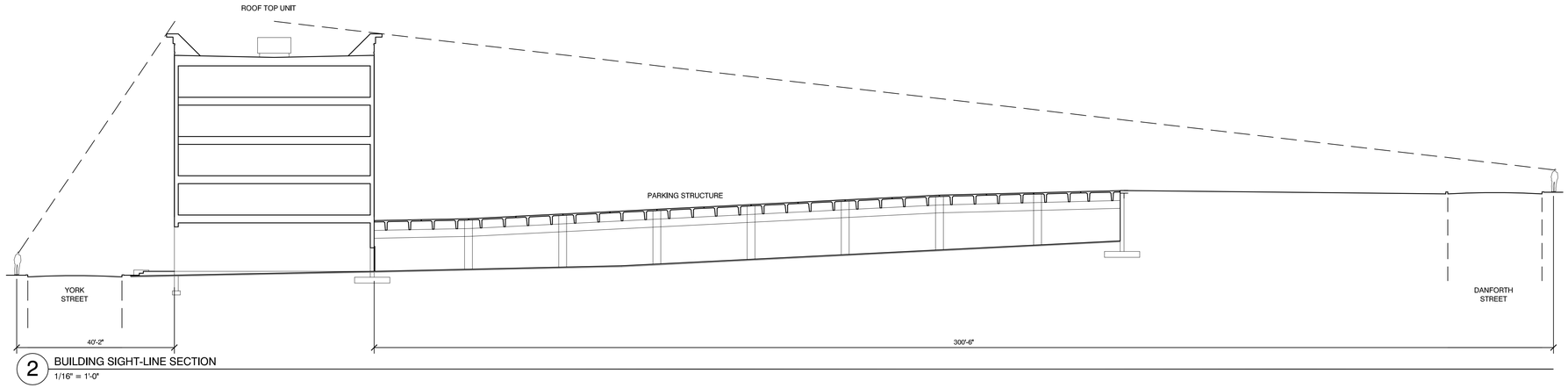
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York Street Development

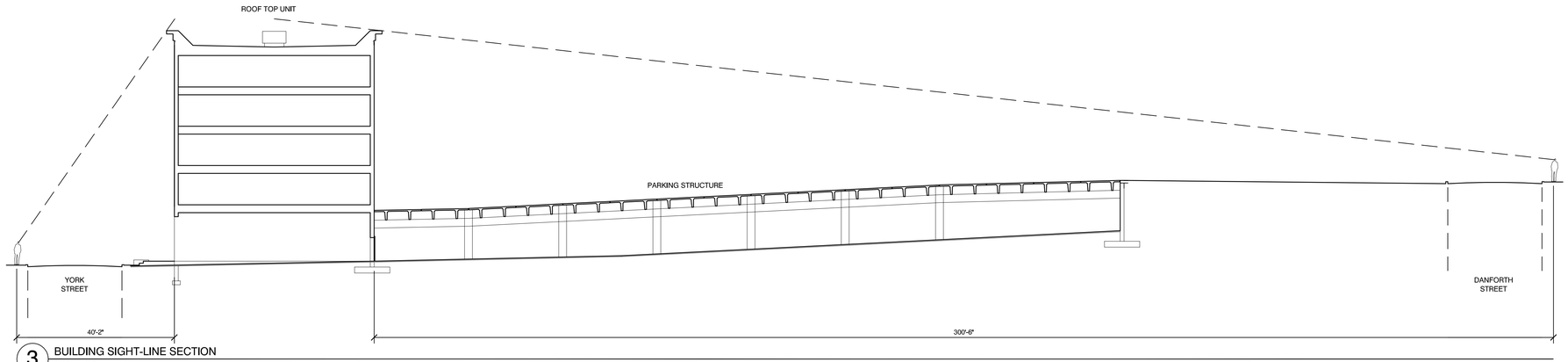
Portland, Maine

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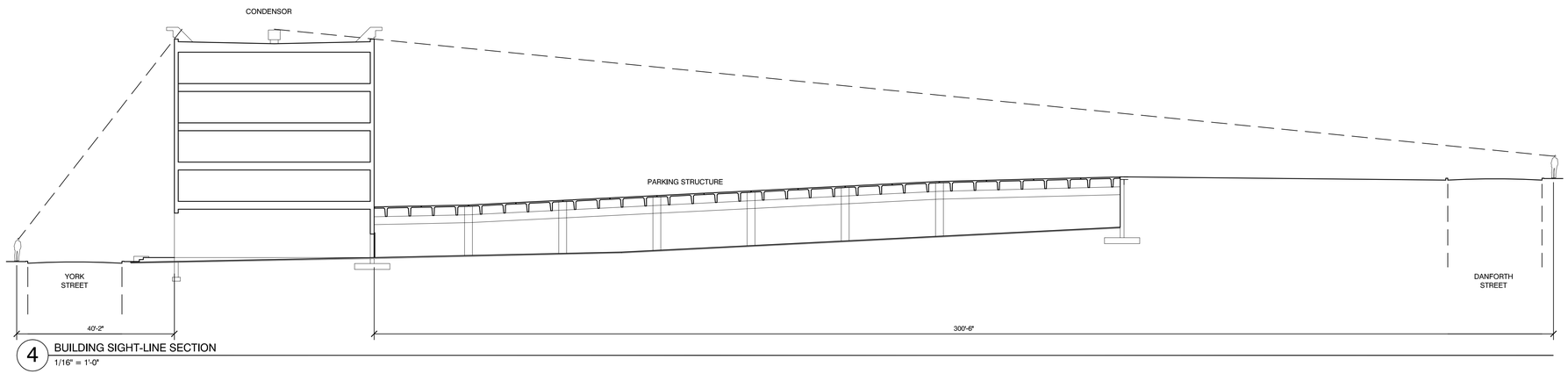
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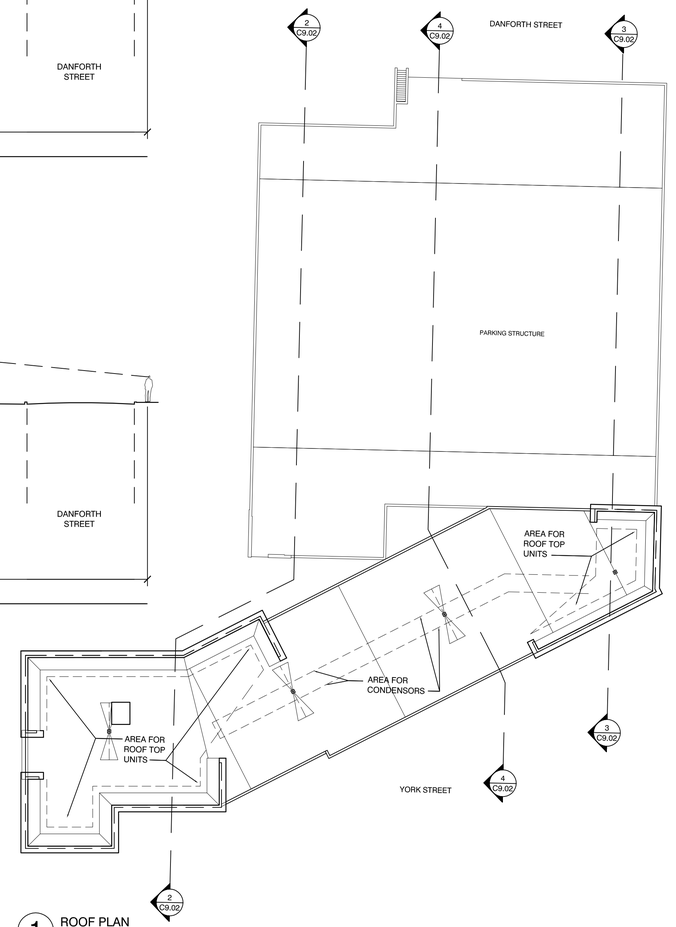
2 BUILDING SIGHT-LINE SECTION
1/16" = 1'-0"



3 BUILDING SIGHT-LINE SECTION
1/16" = 1'-0"



4 BUILDING SIGHT-LINE SECTION
1/16" = 1'-0"



1 ROOF PLAN
1/32" = 1'-0"

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Mixed Use Development

York & High Street
Portland, Maine

REVISION:

ISSUED:
08-14-15 SITE PLAN REVIEW

project architect: KK
drawn by: DQ

BUILDING SECTION & ROOF PLAN

sheet number:
C9.02

Monday, August 17, 2015 11:27:49 AM



Perspective View from York Street

December 01, 2015

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Proposed Mixed Use Development

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Perspective View from the corner of York Street and High Street

December 01, 2015

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Perspective View from High Street

December 01, 2015

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Portland, Maine

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60 0 60 120

Scale in Feet

TRUE

LEGEND

- APPROXIMATE TEST BORING LOCATION
- APPROXIMATE PROBE LOCATION

NOTES:

1. PLAN PREPARED FROM IMAGERY FROM MAINE 0.075M ORTHOPHOTOGRAPHY, DATED 2012 PUBLISHED BY THE MAINE GEOLIBRARY BOARD.

2. BORINGS B-101 THROUGH B-107 WERE PERFORMED BY SEBAGO TECHNICS, INC. THE LOCATIONS WERE PROVIDED ON A PLAN ENTITLED "BORING LOCATION PLAN," PREPARED BY WBRC, DATED 10/21/2013.

3. BORINGS B-201 THROUGH B-207 AND PROBES P-201 THROUGH P-215 WERE PERFORMED BY S.W. COLE ENGINEERING, INC. AND WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.

4. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S.W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.

S.W.COLE ENGINEERING, INC.

J.B. BROWN & SONS

EXPLORATION LOCATION PLAN

PROPOSED COMMERCIAL DEVELOPMENT
YORK STREET AND DANFORTH STREET
PORTLAND, MAINE

Job No.	13-0545	Scale	1"=60'
Date:	11/20/2013	Sheet	1

R:\2013\13-0545\GIS\MXDs\13-0545 Sheet 1 ELP.mxd, 11/20/2013 2:00:03 PM, 1:720,

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-201**
SHEET: 1 OF 1
PROJECT NO.: 13-0545

PROJECT: PROPOSED MIXED USE DEVELOPMENT
CLIENT : J.B. BROWN & SONS
LOCATION: YORK STREET AND DANFORTH STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING INC DRILLER: PETER MICHAUD

DATE START: 11/13/2013
DATE FINISH: 11/13/2013
ELEVATION:
SWC REP.: K. GIMPEL

	TYPE	SIZE	HAMMER WT.	HAMMER FALL
CASING:	HW	4"		
SAMPLER:	SS	1 3/8" I.D.	140-LB	30"
CORE BARREL:	NQ 2"			

WATER LEVEL INFORMATION
SOILS APPEARED SATURATED BELOW 6' +/-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA										
	1D	24"	12"	2.0'	15	21	17	9		BROWN GRAVELLY SILTY SAND WITH BRICKS (FILL)
	2D	18"	6"	3.5'	12	25	30			[PROBABLE RELIC FOUNDATION WALL AT 3.5' - OFFSET 3' AND RESUMED DRILLING]
									5.5'	
	3D	24"	19"	7.0'	2	8	8	11		BROWNISH GRAY SANDY SILT WITH SILTY SAND SEAMS
									8.0'	~MEDIUM DENSE~
	4D	24"	24"	9.0'	7	7	15	15		GRAY SILTY SAND SOME GRAVEL
									10.0'	~MEDIUM DENSE~
HW										
CASING	5D	24"	3"	12.0'	3	3	3	2		GRAY SILTY SAND ~LOOSE~
	6D	24"	4"	17.0'	8	7	5	3		~MEDIUM DENSE~
									19.5'	
	7D	12"	0"	21.0'	50	50				PROBABLE GLACIAL TILL SOILS
									23.5'	
									24.5'	PROBABLE WEATHERED ROCK [ADVANCE BY ROLLER CONE]
										REFUSAL AT 24.5' (PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-201**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-202**
SHEET: 1 OF 1
PROJECT NO.: 13-0545

PROJECT: PROPOSED MIXED USE DEVELOPMENT
CLIENT : J.B. BROWN & SONS
LOCATION: YORK STREET AND DANFORTH STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING INC DRILLER: PETER MICHAUD

DATE START: 11/13/2013
DATE FINISH: 11/13/2013
ELEVATION:
SWC REP.: K. GIMPEL

	TYPE	SIZE	HAMMER WT.	HAMMER FALL
CASING:	HW	4" O.D.		
SAMPLER:	SS	1 3/8" I.D.	140-LB	30"
CORE BARREL:	NQ 2"			

WATER LEVEL INFORMATION
SOILS APPEARED SATURATED BELOW 6' +/-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									1.0'	BROWN GRAVELLY SILTY SAND (FILL)
	1D	24"	15"	2.0'	11	12	7	9	1.8'	BROWN SILTY SAND SOME GRAVEL WITH BRICK (FILL)
									3.0'	~MEDIUM DENSE~ BROWN SAND AND SILT SOME GRAVEL
	2D	24"	16"	4.0'	6	8	9	8	4.0'	~MEDIUM DENSE~ BROWN SILTY SAND AND GRAVEL
										BROWN SILTY SAND
										WITH OCCASIONAL SAND SEAMS
	3D	24"	20"	7.0'	3	4	5	6		~MEDIUM DENSE~
	4D	24"	22"	9.0'	5	5	5	10		…WITH TRACE CLAY
									9.5'	
HW										GRAY SILTY SAND SOME GRAVEL
CASING	5D	24"	14"	12.0'	4	7	7	8	12.0'	~MEDIUM DENSE~
										BROWN SAND TRACE SILT
										~MEDIUM DENSE~
	6D	24"	17"	17.0'	11	11	11	16		
									18.0'	
										GRAY GRAVEL AND SILTY SAND (TILL)
										~DENSE~
	7D	24"	10"	22.0'	23	19	33	35	22.0'	
									24.0'	WEATHERED ROCK
										[ADVANCE BY ROLLER CONE]
										GRAY METAVOLCANIC ROCK, HARD, SLIGHTLY WEATHERED
										FINE-MEDIUM GRAINED, IRON OXIDE STAINING ON FRACTURES
										FRACTURES AT 65 TO 75 DEGREES
	R1	48"	36"	28.0'					28.0'	RQD = 21%
										BOTTOM OF EXPLORATION AT 28.0'
										(BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-202**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-203**
SHEET: 1 OF 1
PROJECT NO.: 13-0545

PROJECT: PROPOSED MIXED USE DEVELOPMENT
CLIENT : J.B. BROWN & SONS
LOCATION: YORK STREET AND DANFORTH STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING INC DRILLER: PETER MICHAUD

DATE START: 11/13/2013
DATE FINISH: 11/13/2013
ELEVATION:
SWC REP.: K. GIMPEL

	TYPE	SIZE	HAMMER WT.	HAMMER FALL
CASING:	HW	4" O.D.		
SAMPLER:	SS	1 3/8" I.D.	140-LB	30"
CORE BARREL:	NQ 2"			

WATER LEVEL INFORMATION
SOILS APPEARED SATURATED BELOW 8' +/-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.1'	BROWN SILTY SAND WITH ORGANICS (LAWN AREA)
	1D	24"	16"	2.0'	7	7	6	4		BROWN SILTY SAND SOME GRAVEL TRACE ORGANICS AND BRICKS (FILL)
	2D	24"	15"	4.0'	4	4	4	3		~ LOOSE TO VERY LOOSE ~
	3D	24"	20"	7.0'	2	1	2	1	8.0'	
	4D	24"	18"	9.0'	1	3	7	10	9.5'	GRAY SILTY SAND [PETROLEUM ODOR] ~LOOSE~
HW CASING	5D	24"	16"	12.0'	6	20	18	8	14.0'	BROWN SILTY SAND ~DENSE~
	6D	24"	17"	17.0'	16	20	17	16	19.0'	BROWN SILTY SAND TRACE GRAVEL WITH OCCASIONAL WEATHERED ROCK FRAGMENTS ~DENSE~
	7D	24"	14"	22.0'	6	7	8	13	23.0'	GRAY SAND SOME SILT ~MEDIUM DENSE~
	8D	24"	14"	27.0'	15	14	13	12	28.0'	BROWN GRAVELLY SILTY SAND WITH OCCASIONAL COBBLES (TILL) ~ MEDIUM DENSE ~
									30.0'	WEATHERED ROCK [ADVANCE BY ROLLER CONE]
	R1	60"	60"	35.0'					35.0'	LIGHT GRAY METAVOLCANIC ROCK, HARD, SLIGHTLY WEATHERED FINE-MEDIUM GRAINED, IRON OXIDE STAINING ON FRACTURES FRACTURES AT 15 TO 80 DEGREES RQD = 32%
										BOTTOM OF EXPLORATION AT 35.0' (BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-203**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-204**
SHEET: 1 OF 1
PROJECT NO.: 13-0545

PROJECT: PROPOSED MIXED USE DEVELOPMENT
CLIENT : J.B. BROWN & SONS
LOCATION: YORK STREET AND DANFORTH STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING INC DRILLER: JEFF LEE

DATE START: 11/12/2013
DATE FINISH: 11/12/2013
ELEVATION:
SWC REP.: E. WALKER

	TYPE	SIZE	HAMMER WT.	HAMMER FALL
CASING:	SSA	4.5" O.D.		
SAMPLER:	SS	1 3/8" I.D.	140-LB	30"
CORE BARREL:	N/A			

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE NO.	SAMPLE PEN.	SAMPLE REC.	SAMPLE DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA										BROWN GRAVELLY SAND SOME SILT (FILL) TRACE ORGANICS TOP 6"
	1D	24"	16"	2.0'	5	9	9	8	2.0'	~ MEDIUM DENSE ~
	2D	24"	14"	4.0'	5	4	3	2		DARK BROWN SILT AND SAND SOME GRAVEL (FILL)
									5.0'	~ LOOSE ~
	3D	24"	18"	7.0'	6	14	13	17		BROWN WITH ORANGE AND DARK BROWN STAINING SILTY SAND SOME GRAVEL WITH WEATHERED BEDROCK FRAGMENTS
									8.5'	(GLACIAL TILL) ~ MEDIUM DENSE ~
										REFUSAL AT 8.5'
										(PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-204**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-205**
SHEET: 1 OF 1
PROJECT NO.: 13-0545

PROJECT: PROPOSED MIXED USE DEVELOPMENT
CLIENT : J.B. BROWN & SONS
LOCATION: YORK STREET AND DANFORTH STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING INC DRILLER: JEFF LEE

DATE START: 11/12/2013
DATE FINISH: 11/12/2013
ELEVATION:
SWC REP.: K. GIMPEL

	TYPE	SIZE	HAMMER WT.	HAMMER FALL
CASING:	HW	4" O.D.		
SAMPLER:	SS	1 3/8" I.D.	140-LB	30"
CORE BARREL:	NQ 2"			

WATER LEVEL INFORMATION
SOILS APPEARED SATURATED BELOW 4' +/-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.1'	2-INCHES ASPHALT PAVEMENT
	1D	24"	16"	2.5'	4	2	2	2	3.0'	BROWN SILTY SAND SOME GRAVEL WITH BRICKS (FILL)
									3.5'	BROWN SILTY SAND (FILL)
	2D	24"	21"	4.5'	2	2	5	5		GRAY SILTY SAND
	3D	24"	15"	7.0'	5	8	11	11		[PETROLEUM ODOR]
										~MEDIUM DENSE BECOMING…
	4D	24"	17"	12.0'	3	2	3	2		…LOOSE~
▼									15.0'	
HW									16.4'	~DENSE~ BROWN GRAVELLY SILTY SAND (TILL)
CASING	5D	17"	16"	16.4'	13	15	50/5"		17.0'	WEATHERED ROCK
TO 16'										GRAY SCHIST, HARD, SLIGHTLY WEATHERED, MEDIUM GRAINED
										FRACTURES AT 35 TO 75 DEGREES
	R1	60"	39"	23.0'						RQD = 65%
	R2	60"	50"	28.0'					28.0'	RQD = 63%
										BOTTOM OF EXPLORATION AT 28.0'
										(BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-205**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-206**
SHEET: 1 OF 1
PROJECT NO.: 13-0545

PROJECT: PROPOSED MIXED USE DEVELOPMENT
CLIENT : J.B. BROWN & SONS
LOCATION: YORK STREET AND DANFORTH STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING INC DRILLER: JEFF LEE

DATE START: 11/12/2013
DATE FINISH: 11/12/2013
ELEVATION:
SWC REP.: K. GIMPEL

	TYPE	SIZE	HAMMER WT.	HAMMER FALL
CASING:	SSA	4.5" O.D.		
SAMPLER:	SS	1 3/8" I.D.	140-LB	30"
CORE BARREL:	N/A			

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.2'	2.5-INCHES ASPHALT PAVEMENT
									1.0'	BROWN GRAVELLY SAND TRACE SILT (FILL)
	1D	24"	17"	2.5'	6	8	8	12		
										BROWN GRAVELLY SILTY SAND
	2D	24"	20"	4.5'	9	15	16	16		~MEDIUM DENSE~
	3D	24"	22"	7.0'	12	15	9	12		
	4D	18"	18"	11.5'	12	11	12	25/0"	11.5'	
										REFUSAL AT 11.5'
										(PROBABLE BEDROCK)

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-206**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-207**
SHEET: 1 OF 1
PROJECT NO.: 13-0545

PROJECT: PROPOSED MIXED USE DEVELOPMENT
CLIENT : J.B. BROWN & SONS
LOCATION: YORK STREET AND DANFORTH STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORING INC DRILLER: JEFF LEE

DATE START: 11/12/2013
DATE FINISH: 11/12/2013
ELEVATION:
SWC REP.: K. GIMPEL

	TYPE	SIZE	HAMMER WT.	HAMMER FALL
CASING:	SSA	4.5" O.D.		
SAMPLER:	SS	1 3/8" I.D.	140-LB	30"
CORE BARREL:	N/A			

WATER LEVEL INFORMATION
SOILS APPEARED SATURATED BELOW 11'+/-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.3'	4-INCHES ASPHALT PAVEMENT
									1.0'	BROWN GRAVELLY SAND TRACE SILT (FILL)
	1D	24"	18"	2.5'	6	6	7	8		BROWN SILTY SAND SOME GRAVEL TRACE ASH (FILL)
	2D	24"	17"	4.5'	7	5	9	8	4.5'	
									5.5'	~MEDIUM DENSE~ BROWN SILTY SAND SOME GRAVEL
	3D	24"	24"	7.0'	5	4	6	7	6.5'	~MEDIUM DENSE~ GRAY SILTY SAND TRACE GRAVEL
									8.0'	~MEDIUM DENSE~ BROWN SAND TRACE SILT
	4D	24"	15"	9.0'	7	8	9	7	8.5'	~MEDIUM DENSE~ BROWN GRAVELLY SAND SOME SILT
										~MEDIUM DENSE~ BROWN GRAVELLY SILTY SAND
									11.0'	WITH WEATHERED ROCK FRAGMENTS
	5D	24"	8"	12.0'	7	6	4	3		GRAY SILTY SAND TRACE CLAY ~MEDIUM DENSE~
									16.0'	
	6D	24"	16"	17.0'	5	10	32	32		BROWN GRAVELLY SILTY SAND (TILL) ~DENSE~
									19.0'	
										REFUSAL AT 19.0' PROBABLE BEDROCK

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-207**

S.W.COLE ENGINEERING, INC.

PROBE DATA

PROJECT: PROPOSED MIXED USE DEVELOPMENT
CLIENT: JB BROWN & SONS
LOCATION: DANFORTH AND YORK STREETS PORTLAND MAINE

PROBE NUMBER	GROUND SURFACE ELEAVTION (FT)	DEPTH TO REFUSAL (FT)	REFUSAL ELEVATION (FT)	ESTIMATED THICKNESS OF FILL SOILS (FT)
P-201		30 NR		8
P-202		30 NR		9
P-203		28.5		9
P-204		24.5		9
P-205		27		7
P-206		8		5
P-207		4		4
P-208		10		5
P-209		4		3
P-210		12.5		9
P-211		8		5
P-212		12		3
P-213		13		5
P-214		19		5
P-215		21		8

NOTES: P-201: 30-foot depth was not refusal, but probable dense till or bedrock
P-201: 30-foot depth was not refusal, but probable dense till or bedrock
P-205: Bedrock at 25.5'
P-207: Refusal at 4-feet below ground surface, offset and had refusal at 6.5'

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - based on laboratory unconfined compressive test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. based on pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass. RQD is computed from recovered core samples.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

Description of Proportions:

0 to 5% TRACE
5 to 12% SOME
12 to 35% "Y"
35+% AND

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

SEBAGO TECHNICS, INC.
One Chabot Street
P.O. Box 1339
WESTBROOK, ME 04098-1339

Phone (207) 856-0277 FAX (207) 856-2206

LETTER OF TRANSMITTAL

18862

DATE	JOB NO.
May 10, 2010	10043

ATTENTION Vincent Veroneau, President

RE: Proposed Office Building
57 York Street
Portland, Maine

TO J. B. Brown & Sons
36 Danforth Street
Portland, ME 04101

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ Boring Logs + Plan

COPIES	DATE	NO.	DESCRIPTION
1	3/26/10		Logs of Borings B101 to B107
			Summary Table
			Boring Locations

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO _____

SIGNED: Ken Ruhm

If enclosures are not as noted, kindly notify us at once.

TABLE I
SUMMARY OF BORINGS
PROPOSED OFFICE BUILDING
57 YORK STREET
PORTLAND, MAINE

Boring Number	Depth (Ft)	Depth to Water (Ft)	Strata Thickness (Ft)					
			Fill	Glaciomarine Sand/Silt	Glacial Outwash	Glacial Till	Weathered Bedrock	Bedrock
B101	20.0	9.5	8.5	--	5.0	6.5	--	0.0*
B102	34.0	14.7	5.3	1.3	--	21.7	5.7	0.0*
B103	27.3	8.4	5.0	6.4	9.4	4.0	2.5	0.0*
B104	15.0	NE	11.0	--	--	3.4	0.6	0.0*
B105	11.6	8.3	4.0	--	6.2	0.7	0.7	0.0*
B106	12.0	7.3	3.0	--	9.0*	--	--	--
B107	25.4	NE	3.5	--	14.8	7.1	--	0.0*

NOTES:

1. NE INDICATES GROUNDWATER NOT ENCOUNTERED WITHIN DEPTH OF BORING.
2. -- INDICATES STRATUM NOT ENCOUNTERED WITHIN DEPTH OF BORING.
3. * INDICATES DEPTH OF PENETRATION INTO STRATUM.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. **B101**

Page 1 of 1

PROJECT	OFFICE BUILDING	STI JOB NO.	10043
LOCATION	57 YORK STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	J. B. BROWN & SONS	FIELD REP.	R. ESTES
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	3/26/2010
DRILLER	M. PORTER	DATE FINISHED	3/26/2010

Elevation ft. Datum — Boring Location See Plan

Item	Casing	Sampler	Core Barrel
Type	HSA	SS	
Inside Diameter (in.)	2.5	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53

- ☑ Truck ☐ Tripod ☐ Cat-Head
- ☐ ATV ☐ Geoprobe ☑ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☐ ☑ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — HSA/SPIN/20.0

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0					0.2		-BITUMINOUS CONCRETE-										
	3	S1	0.5		0.7	SW	Loose, brown well-graded SAND with gravel (SW), mps = 0.75 in., moist	5	20	25	35	15					
	45				1.4		-CONCRETE-										
	22					SW	Dense, dark brown well-graded SAND with gravel (SW), mps = 0.75 in.,	5	10	20	40	25					
	13	8	2.5				ash, brick and cement fragments, moist										
							-FILL-										
5	4	S2	5.0		5.3												
	1					SP-SM	Very loose, dark brown to gray-brown poorly-graded SAND with silt			5	35	50	10				
	1						(SP-SM), brick fragments, mps = 4 mm, moist to wet										
	1	14	7.0														
							-FILL-										
					8.5												
10	5	S3	10.0			SW	Medium dense, yellow-brown to gray-brown well-graded SAND (SW),			10	30	60					
	5						mps = 3 mm, moist										
	8																
	11	16	12.0														
							-GLACIAL OUTWASH DEPOSITS-										
					13.5												
15	3	S4	15.0			SM	Very loose, gray silty SAND with gravel (SM), mps = 1.0 in.,	10	5	15	20	30	20				
	2						slightly bonded, moist to wet										
	1																
	1	8	17.0														
							-GLACIAL TILL DEPOSITS-										
					20.0												
20	50/0	NR	20.0				Split-spoon refusal at 20.0 ft. on probable bedrock										
							Bottom of exploration at 20.0 ft. below ground surface										
25																	
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
3/26/2010	0820	--	--	14.0	9.5

Sample ID

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon Sample
G	Geoprobe
FV	Field Vane

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (Linear ft.)	20.0
Rock Cored (Linear ft.)	--
Number of Samples	4S
BORING NO.	B101

Field Tests — Dilatancy: R - Rapid S - Slow N - None; Toughness: L - Low M - Medium H - High; Plasticity: N - Nonplastic L - Low M - Medium H - High; Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. **B102**

Page 1 of 2

PROJECT	OFFICE BUILDING	STI JOB NO.	10043
LOCATION	57 YORK STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	J. B. BROWN & SONS	FIELD REP.	R. ESTES
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	3/25/2010
DRILLER	M. PORTER	DATE FINISHED	3/25/2010

Elevation ft. Datum — Boring Location See Plan

Item	Casing	Sampler	Core Barrel
Type	HSA	SS	
Inside Diameter (in.)	2.5	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53

- ☑ Truck ☐ Tripod
- ☐ ATV ☐ Geoprobe
- ☐ Track ☐ Air Track
- ☐ Skid ☐
- ☐ Cat-Head
- ☑ Winch
- ☐ Roller Bit
- ☑ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — HSA/SPIN/34.0

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2	S1	0.0			SW-SM	Medium dense, yellow-brown well-graded SAND with silt and gravel (SW-SM), mps = 1.0 in., moist	10	10	20	35	25	10				
	4																
	8				1.5		-FILL-										
	8	10	2.0			SW	Medium dense, dark brown well-graded SAND (SW), mps = 1.0 in., moist	5	5	25	40	25					
							-FILL-										
5	3	S2	5.0		5.3	SW	Medium dense, dark brown well-graded SAND (SW), brick, glass fragments, mps = 0.75 in., moist -FILL-		10	25	40	25					
	6																
	9					ML/SP	Stiff, olive-brown to yellow-brown mottled SILT (ML), interbedded with										
	17	20	7.0		6.6		poorly-graded SAND (SP), mps > 1 mm, moist to wet										
							-MARINE DEPOSITS-										
						SW	Medium dense, light brown to yellow-brown well-graded SAND with gravel (SW), mps = 1.0 in., moist	10	30	20	25	15					
					9.0		-GLACIAL TILL DEPOSITS-										
10	17	S3	10.0			SW-SM	Dense, olive-brown to yellow-brown well-graded SAND with silt and gravel (SW-SM), mps = 1.3 in., slightly bonded, moist to wet	20	15	15	20	20	10				
	22																
	21																
	18	18	12.0														
							-GLACIAL TILL DEPOSITS-										
15	15	S4	15.0			SW-SM	Dense, olive-brown to yellow-brown well-graded SAND with silt and gravel (SW-SM), mps = 1.0 in., slightly bonded, moist to wet	10	20	15	20	25	10				
	28																
	21				16.2		-GLACIAL TILL DEPOSITS-										
	18	20	17.0			SW	Dense, dark brown to red-yellow well-graded SAND (SW), mps = 0.25 in., moist			25	40	30	5				
							-GLACIAL TILL DEPOSITS-										
20	4	S5	20.0		20.1												
	7					SM	Medium dense, gray silty SAND with gravel (SM), mps = 0.75 in., slightly bonded, moist	5	15	15	20	25	20				
	6																
	10	19	22.0														
							-GLACIAL TILL DEPOSITS-										
25	1	S6	25.0			SM	Very loose, gray silty SAND with gravel (SM), mps = 0.75 in., wet		15	15	20	25	25				
	WOH																
	1																
	1	19	27.0				-GLACIAL TILL DEPOSITS-										
					28.3												
							-WEATHERED BEDROCK-										
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
3/25/2010	1700	--	--	18.0	14.7

Sample ID

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon Sample
G	Geoprobe
FV	Field Vane

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (Linear ft.)	28.3
Rock Cored (Linear ft.)	--
Number of Samples	7S
BORING NO.	B102

Field Tests — Dilatancy: R - Rapid S - Slow N - None; Toughness: L - Low M - Medium H - High; Plasticity: N - Nonplastic L - Low M - Medium H - High; Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. **B102**

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
30	10	S7	30.0				Medium dense, olive-brown to gray-brown moderately to highly weathered bedrock										
	10																
	13																
	42	14	32.0				-WEATHERED BEDROCK-										
					34.0												
35							HSA refusal at 34.0 ft. Bottom of exploration at 34.0 ft. below ground surface										
40																	
45																	
50																	
55																	

NOTES:

FILE NO. 10043

BORING NO. B102

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. B103

Page 1 of 1

PROJECT	OFFICE BUILDING	STI JOB NO.	10043
LOCATION	57 YORK STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	J. B. BROWN & SONS	FIELD REP.	R. ESTES
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	3/25/2010
DRILLER	M. PORTER	DATE FINISHED	3/25/2010

Elevation ft. Datum — Boring Location See Plan

Item	Casing	Sampler	Core Barrel
Type	HSA	SS	
Inside Diameter (in.)	2.5	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53

- ☑ Truck ☐ Tripod ☐ Cat-Head
- ☐ ATV ☐ Geoprobe ☑ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☐ ☑ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — HSA/SPIN/27.3

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	5	S1	0.0			SW	Medium dense, yellow-brown to brown well-graded SAND with gravel	20	15	20	25	20					
	6				1.0		(SW), mps = 1.0 in., moist -FILL-										
	9					SW	Medium dense, brown to dark brown well-graded SAND with gravel		15	20	35	25	5				
	12	15	2.0				(SW), mps = 0.25 in., ash, brick fragments, moist										
							-FILL-										
5					5.0												
	1	S2	5.0			ML/SP	Medium stiff, olive-brown to yellow-brown SILT (ML), interbedded with					30	70	S	L	L	
	3						poorly-graded SAND (SP), mottled, mps < 1 mm, moist										
	3																
	3	24	7.0														
							-MARINE DEPOSITS-										
10	1	S3	10.0			ML/SP	Medium stiff, olive-brown SILT (ML), interbedded with poorly-graded					30	70	S	L	L	
	1						SAND (SP), slightly mottled, mps < 1 mm, wet										
	4				11.4		-MARINE DEPOSITS-										
	16	24	12.0			SP	Medium dense, red-yellow poorly-graded SAND (SP), mps < 1 mm, wet				5	95					
							-GLACIAL OUTWASH DEPOSITS-										
					13.4												
15	8	S4	15.0			SW-SP	Medium dense, brown to yellow-brown well-graded SAND (SW)	10	10	20	20	40					
	8						interbedded with poorly-graded SAND (SP), occasional gravel layers,										
	6						mps = 1.0 in., wet										
	10	24	17.0														
							-GLACIAL OUTWASH DEPOSITS-										
20	7	S5	20.0			SW	Medium dense, brown well-graded SAND (SW), mps = 4 mm, wet				30	55	15				
	13				20.8		-GLACIAL OUTWASH DEPOSITS-										
	18					SM	Dense, gray silty SAND (SM), mps = 0.5 in., moist to wet, slightly		5	20	30	30	15				
	72	20	22.0				bonded										
							-GLACIAL TILL DEPOSITS-										
25					24.8												
	29	S6	25.0				Very dense, olive-brown to gray moderately weathered bedrock fragments										
	32																
	33						-WEATHERED BEDROCK-										
	40	8	27.0														
					27.3												
							HSA refusal at 27.3 ft.										
							Bottom of exploration at 27.3 ft. below ground surface										
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
3/25/2010	1530		--	12.7	8.4

Sample ID

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon Sample
G	Geoprobe
FV	Field Vane

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (Linear ft.)	24.8
Rock Cored (Linear ft.)	--
Number of Samples	6S
BORING NO.	B103

Field Tests — Dilatancy: R - Rapid S - Slow N - None; Toughness: L - Low M - Medium H - High; Plasticity: N - Nonplastic L - Low M - Medium H - High; Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. **B104**

Page 1 of 1

PROJECT	OFFICE BUILDING	STI JOB NO.	10043
LOCATION	57 YORK STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	J. B. BROWN & SONS	FIELD REP.	R. ESTES
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	3/26/2010
DRILLER	M. PORTER	DATE FINISHED	3/26/2010

Elevation ft. Datum — Boring Location See Plan

Item	Casing	Sampler	Core Barrel
Type	HSA	SS	
Inside Diameter (in.)	2.5	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53

- ☑ Truck ☐ Tripod
- ☐ ATV ☐ Geoprobe
- ☐ Track ☐ Air Track
- ☐ Skid ☐
- ☐ Cat-Head
- ☑ Winch
- ☐ Roller Bit
- ☑ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — HSA/SPIN/15.0

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Toughness	Plasticity	Strength
0	6	S1	0.0			SW	Dense, dark brown to brown well-graded SAND with gravel (SW), mps =	15	15	20	30	20					
	16						1.3 in., brick, concrete, glass and bituminous concrete fragments, moist										
	15																
	11	17	2.0														
							-FILL-										
5	2	S2	5.0			SW	Very loose, gray-brown well-graded SAND with gravel (SW), concrete	15	20	25	20	15	5				
	2						and brick fragments, mps = 1.25 in., wet										
	1																
	1	9	7.0														
							-FILL-										
10	2	S3	10.0			SW	Loose, yellow-brown well-graded SAND with gravel (SW), brick	10	5	5	20	60					
	5				11.0		fragments, mps = 1.25 in., wet -FILL-										
	5					SM	Loose, olive-brown silty SAND with gravel (SM), mps = 1.3 in., wet,	10	10	15	20	25	20				
	3	14	12.0				slightly bonded										
							-GLACIAL TILL DEPOSITS-										
					14.4												
15					15.0		Note: weathered bedrock in auger cuttings- WEATHERED BEDROCK-										
	50/0	NR	15.0				Split-spoon refusal at 15.0 ft.										
							Bottom of exploration at 15.0 ft. below ground surface										
20																	
25																	
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
3/26/2010	1015	--	--	15.0	Dry

Sample ID

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon Sample
G	Geoprobe
FV	Field Vane

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (Linear ft.)	14.4
Rock Cored (Linear ft.)	--
Number of Samples	3S
BORING NO.	B104

Field Tests

Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. **B105**

Page 1 of 1

PROJECT	OFFICE BUILDING	STI JOB NO.	10043
LOCATION	57 YORK STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	J. B. BROWN & SONS	FIELD REP.	R. ESTES
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	3/26/2010
DRILLER	M. PORTER	DATE FINISHED	3/26/2010

Elevation ft. Datum — Boring Location See Plan

Item	Casing	Sampler	Core Barrel
Type	HSA	SS	
Inside Diameter (in.)	2.5	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53

- ☑ Truck ☐ Tripod ☐ Cat-Head
- ☐ ATV ☐ Geoprobe ☑ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☐ ☑ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — HSA/SPIN/11.6

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test: Dilatancy	Toughness	Plasticity	Strength
0	7	S1	0.0			GW	Medium dense, brown well-graded GRAVEL with sand (GW), mps = 1.5 in., moist	30	25	20	15	10					
	7				1.8		-FILL-										
	7					SW	Medium dense, dark brown well-graded SAND with gravel (SW), mps = 1.3 in., bituminous concrete fragments, moist to wet	15	20	20	25	15	5				
	7	6	2.0														
					4.0		-FILL-										
5	3	S2	5.0			SP	Medium dense, yellow-brown to tan poorly-graded SAND (SP), mps = 3 mm, moist			5	25	70					
	5																
	6																
	6	21	7.0				-GLACIAL OUTWASH DEPOSITS-										
10	7	S3	10.0		10.2												
	50/5"	11	10.9		10.9		Medium dense, yellow-brown to olive-brown silty SAND with gravel (SM), mps = 1.0 in., wet -GLACIAL TILL DEPOSITS-	10	10	15	20	25	20				
					11.6		Note: weathered bedrock in auger cuttings -WEATHERED BEDROCK-										
							HSA refusal at 11.6 ft.										
							Bottom of exploration at 11.6 ft. below ground surface										
15																	
20																	
25																	
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
3/26/2010	1150	--	--	9.9	8.3

Sample ID

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon Sample
- G Geoprobe
- FV Field Vane

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (Linear ft.)	10.9
Rock Cored (Linear ft.)	--
Number of Samples	3S
BORING NO.	B105

Field Tests

Dilatancy: R - Rapid S - Slow N - None

Toughness: L - Low M - Medium H - High

Plasticity: N - Nonplastic L - Low M - Medium H - High

Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. **B106**

Page 1 of 1

PROJECT	OFFICE BUILDING	STI JOB NO.	10043
LOCATION	57 YORK STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	J. B. BROWN & SONS	FIELD REP.	R. ESTES
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	3/26/2010
DRILLER	M. PORTER	DATE FINISHED	3/26/2010

Elevation ft. Datum — Boring Location See Plan

Item	Casing	Sampler	Core Barrel
Type	HSA	SS	
Inside Diameter (in.)	2.5	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53

- ☑ Truck ☐ Tripod ☐ Cat-Head
- ☐ ATV ☐ Geoprobe ☑ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☑ Cutting Head

Hammer Type: ☑ Safety ☐ Doughnut ☐ Automatic

Drilling Mud: ☐ Bentonite ☐ Polymer ☑ None

Casing Advance: Type Method Depth — HSA/SPIN/10.0

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1	S1	0.0			SW	Loose, dark brown to brown well-graded SAND with gravel (SW), mps = 1.3 in., moist	20	15	15	25	25					
	1																
	8																
	11	13	2.0														
							-FILL-										
					3.0												
5	14	S2	5.0			SM-SP	Medium dense, olive-brown to yellow-brown silty SAND with gravel (SM), interbedded with poorly-graded SAND (SP), mps = 1.25 in., moist to wet	10	10	10	20	30	20				
	16																
	12																
	25	9	7.0														
							-GLACIAL OUTWASH DEPOSITS-										
10	5	S3	10.0		10.3	SP-SM	Similar to S2 from 10.0 to 10.3 ft.										
	4					SP	Loose, yellow-brown poorly-graded SAND (SP), occasional silt seams, mps = 1.0 in., wet				5	90	5				
	5																
	4	20	12.0				-GLACIAL OUTWASH DEPOSITS-										
							Bottom of exploration at 12.0 ft. below ground surface										
							No refusal										
15																	
20																	
25																	
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
3/26/2010	1110	--	10.0	10.2	7.7
3/26/2010	1115		--	9.1	7.3

Sample ID

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon Sample
G	Geoprobe
FV	Field Vane

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (Linear ft.)	12.0
Rock Cored (Linear ft.)	--
Number of Samples	3S
BORING NO.	B106

Field Tests — Dilatancy: R - Rapid S - Slow N - None; Toughness: L - Low M - Medium H - High; Plasticity: N - Nonplastic L - Low M - Medium H - High; Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

SEBAGO TECHNICS, INC.

TEST BORING REPORT

BORING NO. **B107**

Page 1 of 1

PROJECT	OFFICE BUILDING	STI JOB NO.	10043
LOCATION	57 YORK STREET, PORTLAND, MAINE	PROJECT MGR.	K. RECKER
CLIENT	J. B. BROWN & SONS	FIELD REP.	R. ESTES
CONTRACTOR	MAINE TEST BORINGS, INC.	DATE STARTED	3/26/2010
DRILLER	M. PORTER	DATE FINISHED	3/26/2010

Elevation ft. Datum — Boring Location See Plan

Item	Casing	Sampler	Core Barrel
Type	HSA	SS	
Inside Diameter (in.)	2.5	1.375	
Hammer Weight (lb.)		140	
Hammer Fall (in.)		30	

Rig Make & Model: Mobile B53

- [x] Truck
- [ ] Tripod
- [ ] ATV
- [ ] Geoprobe
- [ ] Track
- [ ] Air Track
- [ ] Skid
- [ ] Cat-Head
- [x] Winch
- [ ] Roller Bit
- [x] Cutting Head

Hammer Type: [x] Safety [ ] Doughnut [ ] Automatic

Drilling Mud: [ ] Bentonite [ ] Polymer [x] None

Casing Advance: Type Method Depth — HSA/SPIN/25.0

Drilling Notes:

Depth (ft.)	Sampler Blows per 6 in.	Sample No. & Recovery (in.)	Sample Depth (ft.)	Well Diagram	Stratum Change (ft.)	USCS Symbol	Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	16	S1	0.0			SW	Medium dense, brown well-graded SAND with gravel (SW), mps = 1.0	20	15	20	30	15					
	17						in., brick, concrete and bituminous concrete fragments, moist										
	12																
	8	13	2.0				-FILL-										
					3.5												
5	4	S2	5.0			SP-SW	Loose, yellow-brown to tan poorly-graded SAND (SP), interbedded with		5	15	30	50					
	5						well-graded SAND (SW), mps = 0.25 in., moist										
	5																
	6	16	7.0														
							-GLACIAL OUTWASH DEPOSITS-										
10	6	S3	10.0			SW	Medium dense, yellow-brown to tan well-graded SAND (SW), mps =		5	25	40	30					
	8						0.25 in., moist										
	9																
	12	15	12.0				-GLACIAL OUTWASH DEPOSITS-										
15	5	S4	15.0			SW	Medium dense, yellow-brown well-graded SAND (SW), mps = 0.25 in.,		5	25	40	30					
	7						wet										
	8																
	9	18	17.0				-GLACIAL OUTWASH DEPOSITS-										
					18.3												
20	11	S5	20.0			SM	Dense, gray silty SAND with gravel (SM), mps = 1.3 in., moist to wet,	10	10	15	20	25	20				
	16						slightly bonded										
	15																
	5	18	22.0				-GLACIAL TILL DEPOSITS-										
25	50/5"	S6	25.0		25.2		Similar to S5 from 25.0 to 25.2 ft.										
		5	25.4		25.4	SP	Dense, light brown poorly-graded SAND (SP), mps = 4 mm, wet				5	90	5				
							-GLACIAL TILL DEPOSITS-										
							Split-spoon refusal at 25.4 ft. on probable bedrock										
							Bottom of exploration at 25.4 ft. below ground surface										
30																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth in feet to: Bottom of Casing	Bottom of Hole	Water
3/26/2010	0855		15.0	15.0	14.3
3/26/2010	0920		--	14.0	Dry

Sample ID

O	Open End Rod
T	Thin Wall Tube
U	Undisturbed Sample
S	Split Spoon Sample
G	Geoprobe
FV	Field Vane

Well Diagram

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

Summary

Overburden (Linear ft.)	25.4
Rock Cored (Linear ft.)	--
Number of Samples	6S
BORING NO.	B107

Field Tests

Dilatancy: R - Rapid S - Slow N - None

Toughness: L - Low M - Medium H - High

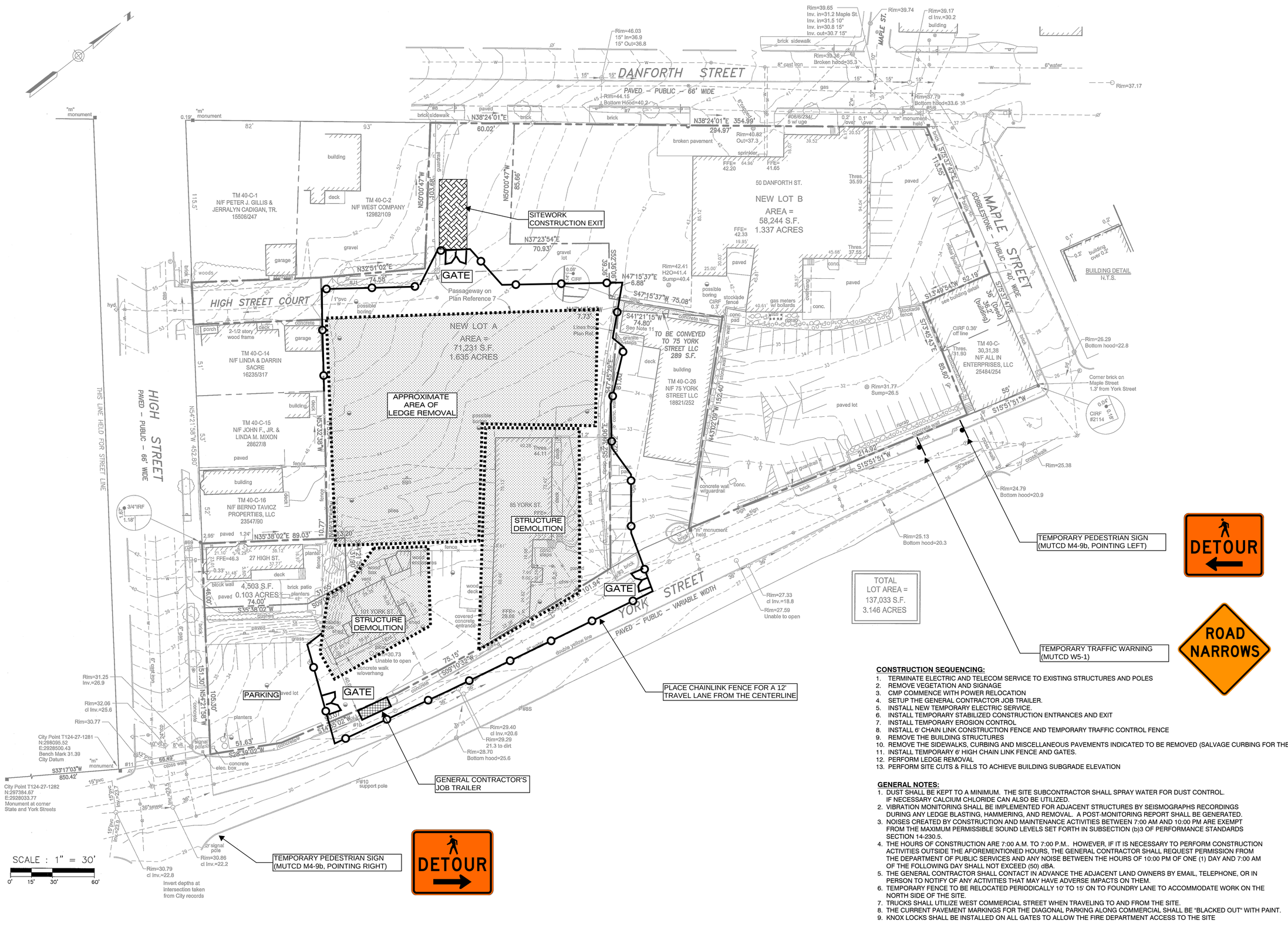
Plasticity: N - Nonplastic L - Low M - Medium H - High

Dry Strength: N - None L - Low M - Medium H - High V - Very High

*NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.

NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.

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CONSTRUCTION SEQUENCING:

1. TERMINATE ELECTRIC AND TELECOM SERVICE TO EXISTING STRUCTURES AND POLES
2. REMOVE VEGETATION AND SIGNAGE
3. CMP COMMENCE WITH POWER RELOCATION
4. SETUP THE GENERAL CONTRACTOR JOB TRAILER.
5. INSTALL NEW TEMPORARY ELECTRIC SERVICE.
6. INSTALL TEMPORARY STABILIZED CONSTRUCTION ENTRANCES AND EXIT
7. INSTALL TEMPORARY EROSION CONTROL
8. INSTALL 6' CHAIN LINK CONSTRUCTION FENCE AND TEMPORARY TRAFFIC CONTROL FENCE
9. REMOVE THE BUILDING STRUCTURES
10. REMOVE THE SIDEWALKS, CURBING AND MISCELLANEOUS PAVEMENTS INDICATED TO BE REMOVED (SALVAGE CURBING FOR THE CITY).
11. INSTALL TEMPORARY 6' HIGH CHAIN LINK FENCE AND GATES.
12. PERFORM LEDGE REMOVAL
13. PERFORM SITE CUTS & FILLS TO ACHIEVE BUILDING SUBGRADE ELEVATION

GENERAL NOTES:

1. DUST SHALL BE KEPT TO A MINIMUM. THE SITE SUBCONTRACTOR SHALL SPRAY WATER FOR DUST CONTROL. IF NECESSARY CALCIUM CHLORIDE CAN ALSO BE UTILIZED.
2. VIBRATION MONITORING SHALL BE IMPLEMENTED FOR ADJACENT STRUCTURES BY SEISMOGRAPHS RECORDINGS DURING ANY LEDGE BLASTING, HAMMERING, AND REMOVAL. A POST-MONITORING REPORT SHALL BE GENERATED.
3. NOISES CREATED BY CONSTRUCTION AND MAINTENANCE ACTIVITIES BETWEEN 7:00 AM AND 10:00 PM ARE EXEMPT FROM THE MAXIMUM PERMISSIBLE SOUND LEVELS SET FORTH IN SUBSECTION (b)3 OF PERFORMANCE STANDARDS SECTION 14-230.5.
4. THE HOURS OF CONSTRUCTION ARE 7:00 A.M. TO 7:00 P.M.. HOWEVER, IF IT IS NECESSARY TO PERFORM CONSTRUCTION ACTIVITIES OUTSIDE THE AFOREMENTIONED HOURS, THE GENERAL CONTRACTOR SHALL REQUEST PERMISSION FROM THE DEPARTMENT OF PUBLIC SERVICES AND ANY NOISE BETWEEN THE HOURS OF 10:00 PM OF ONE (1) DAY AND 7:00 AM OF THE FOLLOWING DAY SHALL NOT EXCEED (50) dBA.
5. THE GENERAL CONTRACTOR SHALL CONTACT IN ADVANCE THE ADJACENT LAND OWNERS BY EMAIL, TELEPHONE, OR IN PERSON TO NOTIFY OF ANY ACTIVITIES THAT MAY HAVE ADVERSE IMPACTS ON THEM.
6. TEMPORARY FENCE TO BE RELOCATED PERIODICALLY 10' TO 15' ON TO FOUNDRY LANE TO ACCOMMODATE WORK ON THE NORTH SIDE OF THE SITE.
7. TRUCKS SHALL UTILIZE WEST COMMERCIAL STREET WHEN TRAVELING TO AND FROM THE SITE.
8. THE CURRENT PAVEMENT MARKINGS FOR THE DIAGONAL PARKING ALONG COMMERCIAL SHALL BE "BLACKED OUT" WITH PAINT.
9. KNOX LOCKS SHALL BE INSTALLED ON ALL GATES TO ALLOW THE FIRE DEPARTMENT ACCESS TO THE SITE

OPECHEE CONSTRUCTION CORPORATION
1 CORPORATE DRIVE ■ BELMONT ■ NH 03220
PH (603) 267-6908 ■ WWW.OPECHEE.COM

Mixed Use Development

York & High Streets
Portland, Maine

REVISION:

ISSUED: 8-14-15 SITE PLAN REVIEW

project architect: KK
drawn by: BS

CONSTRUCTION MANAGEMENT ADVANCE SITEWORK

sheet number:
C10.01

Tuesday, July 28, 2015 1:32:07 PM

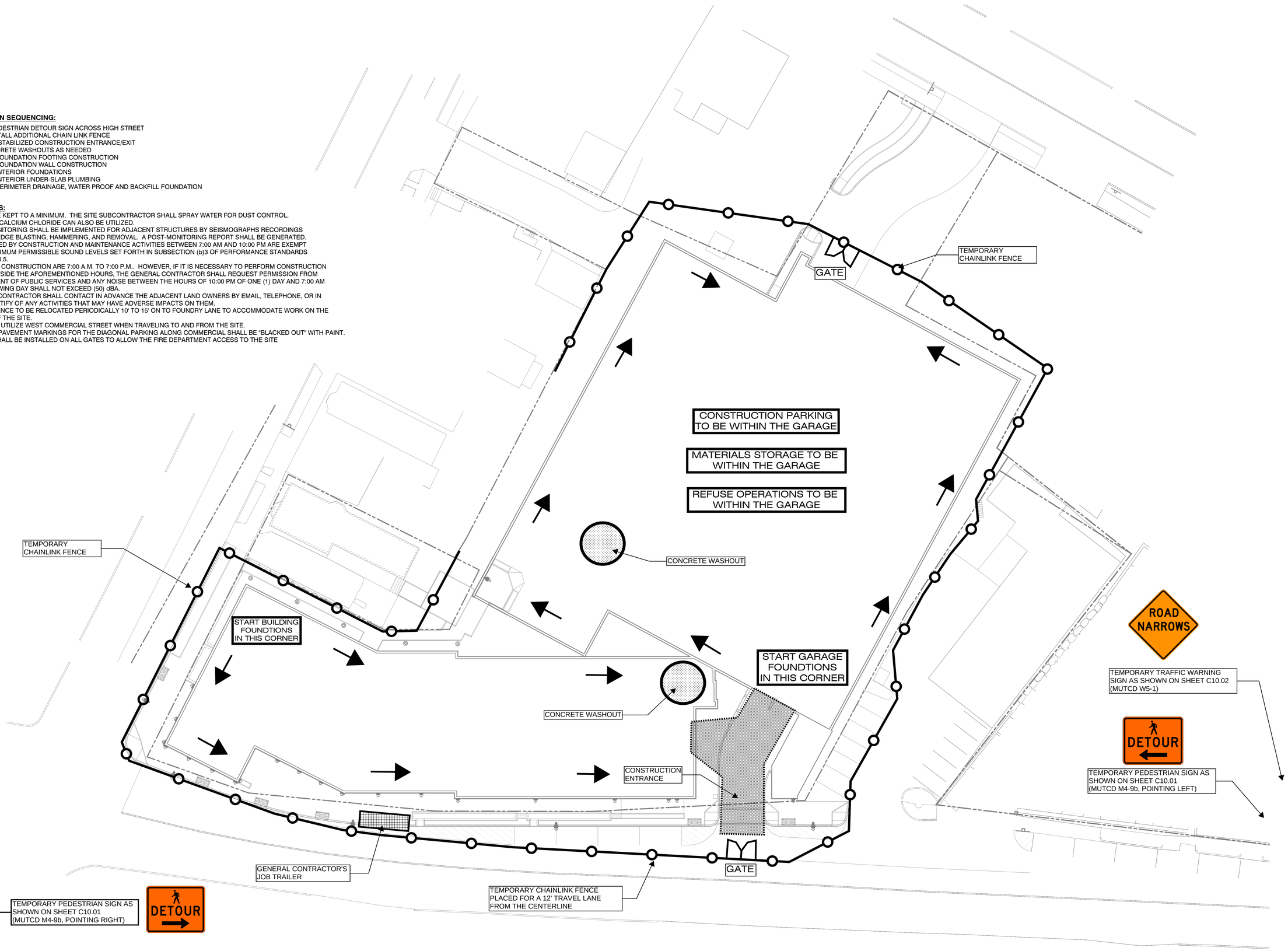
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CONSTRUCTION SEQUENCING:

1. RELOCATE PEDESTRIAN DETOUR SIGN ACROSS HIGH STREET
2. ADJUST & INSTALL ADDITIONAL CHAIN LINK FENCE
3. INSTALL NEW STABILIZED CONSTRUCTION ENTRANCE/EXIT
4. INSTALL CONCRETE WASHOUTS AS NEEDED
5. CONSTRUCT FOUNDATION FOOTING CONSTRUCTION
6. CONSTRUCT FOUNDATION WALL CONSTRUCTION
7. CONSTRUCT INTERIOR FOUNDATIONS
8. CONSTRUCT INTERIOR UNDER-SLAB PLUMBING
9. CONSTRUCT PERIMETER DRAINAGE, WATER PROOF AND BACKFILL FOUNDATION

GENERAL NOTES:

1. DUST SHALL BE KEPT TO A MINIMUM. THE SITE SUBCONTRACTOR SHALL SPRAY WATER FOR DUST CONTROL. IF NECESSARY CALCIUM CHLORIDE CAN ALSO BE UTILIZED.
2. VIBRATION MONITORING SHALL BE IMPLEMENTED FOR ADJACENT STRUCTURES BY SEISMOGRAPHS RECORDINGS DURING ANY LEDGE BLASTING, HAMMERING, AND REMOVAL. A POST-MONITORING REPORT SHALL BE GENERATED.
3. NOISES CREATED BY CONSTRUCTION AND MAINTENANCE ACTIVITIES BETWEEN 7:00 AM AND 10:00 PM ARE EXEMPT FROM THE MAXIMUM PERMISSIBLE SOUND LEVELS SET FORTH IN SUBSECTION (b)3 OF PERFORMANCE STANDARDS SECTION 14-230.5.
4. THE HOURS OF CONSTRUCTION ARE 7:00 A.M. TO 7:00 P.M.. HOWEVER, IF IT IS NECESSARY TO PERFORM CONSTRUCTION ACTIVITIES OUTSIDE THE AFOREMENTIONED HOURS, THE GENERAL CONTRACTOR SHALL REQUEST PERMISSION FROM THE DEPARTMENT OF PUBLIC SERVICES AND ANY NOISE BETWEEN THE HOURS OF 10:00 PM OF ONE (1) DAY AND 7:00 AM OF THE FOLLOWING DAY SHALL NOT EXCEED (50) dBA.
5. THE GENERAL CONTRACTOR SHALL CONTACT IN ADVANCE THE ADJACENT LAND OWNERS BY EMAIL, TELEPHONE, OR IN PERSON TO NOTIFY OF ANY ACTIVITIES THAT MAY HAVE ADVERSE IMPACTS ON THEM.
6. TEMPORARY FENCE TO BE RELOCATED PERIODICALLY 10' TO 15' ON TO FOUNDRY LANE TO ACCOMMODATE WORK ON THE NORTH SIDE OF THE SITE.
7. TRUCKS SHALL UTILIZE WEST COMMERCIAL STREET WHEN TRAVELING TO AND FROM THE SITE.
8. THE CURRENT PAVEMENT MARKINGS FOR THE DIAGONAL PARKING ALONG COMMERCIAL SHALL BE "BLACKED OUT" WITH PAINT.
9. KNOX LOCKS SHALL BE INSTALLED ON ALL GATES TO ALLOW THE FIRE DEPARTMENT ACCESS TO THE SITE



OPECHEE CONSTRUCTION CORPORATION
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Mixed Use Development

York & High Street
Portland, Maine

REVISION:

ISSUED:
8-14-15 SITE PLAN REVIEW

project architect: KK
drawn by: BS

CONSTRUCTION MANAGEMENT FOUNDATIONS

sheet number:
C10.02

Friday, August 14, 2015 3:32:30 PM

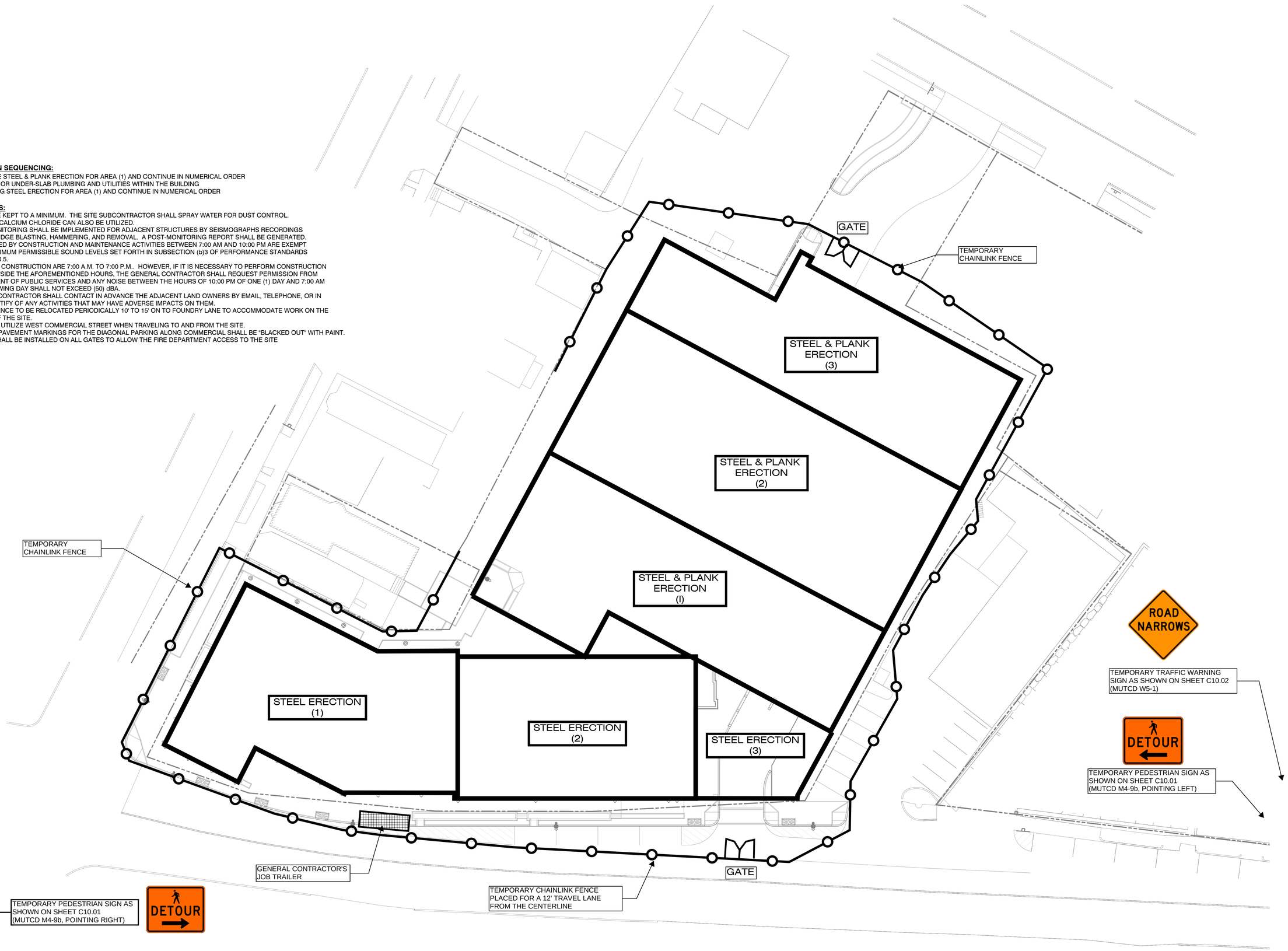
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CONSTRUCTION SEQUENCING:

1. BEGIN GARAGE STEEL & PLANK ERECTION FOR AREA (1) AND CONTINUE IN NUMERICAL ORDER
2. INSTALL INTERIOR UNDER-SLAB PLUMBING AND UTILITIES WITHIN THE BUILDING
2. BEGIN BUILDING STEEL ERECTION FOR AREA (1) AND CONTINUE IN NUMERICAL ORDER

GENERAL NOTES:

1. DUST SHALL BE KEPT TO A MINIMUM. THE SITE SUBCONTRACTOR SHALL SPRAY WATER FOR DUST CONTROL. IF NECESSARY CALCIUM CHLORIDE CAN ALSO BE UTILIZED.
2. VIBRATION MONITORING SHALL BE IMPLEMENTED FOR ADJACENT STRUCTURES BY SEISMOGRAPHS RECORDINGS DURING ANY LEDGE BLASTING, HAMMERING, AND REMOVAL. A POST-MONITORING REPORT SHALL BE GENERATED.
3. NOISES CREATED BY CONSTRUCTION AND MAINTENANCE ACTIVITIES BETWEEN 7:00 AM AND 10:00 PM ARE EXEMPT FROM THE MAXIMUM PERMISSIBLE SOUND LEVELS SET FORTH IN SUBSECTION (b)3 OF PERFORMANCE STANDARDS SECTION 14-230.5.
4. THE HOURS OF CONSTRUCTION ARE 7:00 A.M. TO 7:00 P.M.. HOWEVER, IF IT IS NECESSARY TO PERFORM CONSTRUCTION ACTIVITIES OUTSIDE THE AFOREMENTIONED HOURS, THE GENERAL CONTRACTOR SHALL REQUEST PERMISSION FROM THE DEPARTMENT OF PUBLIC SERVICES AND ANY NOISE BETWEEN THE HOURS OF 10:00 PM OF ONE (1) DAY AND 7:00 AM OF THE FOLLOWING DAY SHALL NOT EXCEED (50) dBA.
5. THE GENERAL CONTRACTOR SHALL CONTACT IN ADVANCE THE ADJACENT LAND OWNERS BY EMAIL, TELEPHONE, OR IN PERSON TO NOTIFY OF ANY ACTIVITIES THAT MAY HAVE ADVERSE IMPACTS ON THEM.
6. TEMPORARY FENCE TO BE RELOCATED PERIODICALLY 10' TO 15' ON TO FOUNDRY LANE TO ACCOMMODATE WORK ON THE NORTH SIDE OF THE SITE.
7. TRUCKS SHALL UTILIZE WEST COMMERCIAL STREET WHEN TRAVELING TO AND FROM THE SITE.
8. THE CURRENT PAVEMENT MARKINGS FOR THE DIAGONAL PARKING ALONG COMMERCIAL SHALL BE "BLACKED OUT" WITH PAINT.
9. KNOX LOCKS SHALL BE INSTALLED ON ALL GATES TO ALLOW THE FIRE DEPARTMENT ACCESS TO THE SITE



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Mixed Use Development

York & High Street
Portland, Maine

REVISION:

ISSUED: 8-14-15 SITE PLAN REVIEW

project architect: KK
drawn by: BS

CONSTRUCTION MANAGEMENT STEEL & PLANK ERECTION

sheet number:
C10.03

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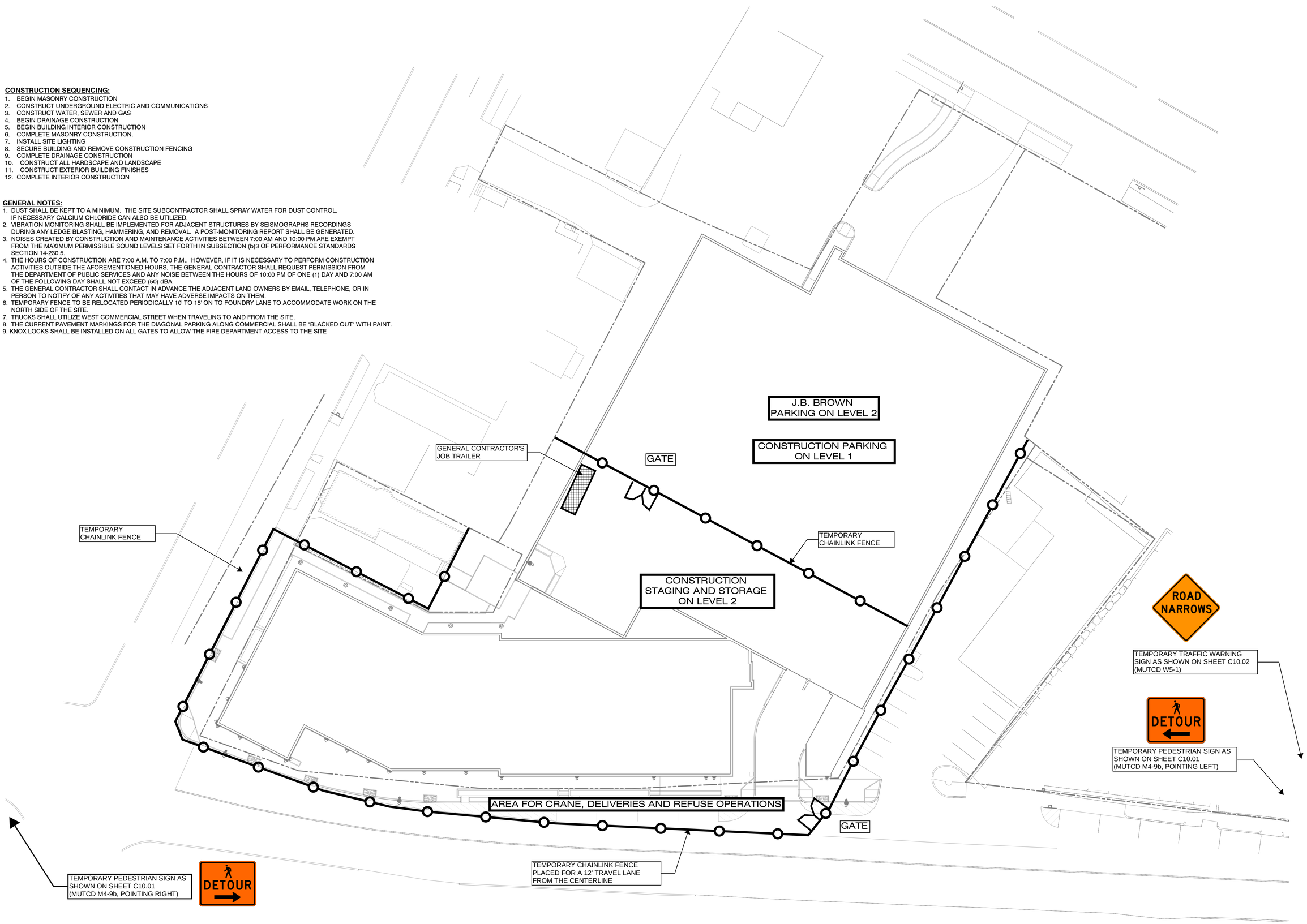
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CONSTRUCTION SEQUENCING:

1. BEGIN MASONRY CONSTRUCTION
2. CONSTRUCT UNDERGROUND ELECTRIC AND COMMUNICATIONS
3. CONSTRUCT WATER, SEWER AND GAS
4. BEGIN DRAINAGE CONSTRUCTION
5. BEGIN BUILDING INTERIOR CONSTRUCTION
6. COMPLETE MASONRY CONSTRUCTION.
7. INSTALL SITE LIGHTING
8. SECURE BUILDING AND REMOVE CONSTRUCTION FENCING
9. COMPLETE DRAINAGE CONSTRUCTION
10. CONSTRUCT ALL HARDSCAPE AND LANDSCAPE
11. CONSTRUCT EXTERIOR BUILDING FINISHES
12. COMPLETE INTERIOR CONSTRUCTION

GENERAL NOTES:

1. DUST SHALL BE KEPT TO A MINIMUM. THE SITE SUBCONTRACTOR SHALL SPRAY WATER FOR DUST CONTROL. IF NECESSARY CALCIUM CHLORIDE CAN ALSO BE UTILIZED.
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Mixed Use Development

York & High Street
Portland, Maine

REVISION:

ISSUED:
8-14-15 SITE PLAN REVIEW

project architect: KK
drawn by: BS

CONSTRUCTION MANAGEMENT MASONRY & SITEWORK

sheet number:
C10.04

Friday, August 14, 2015 3:32:30 PM

`PLANNING BOARD REPORT
PORTLAND, MAINE

CONVERSION OF PARISH HOUSE INTO 5 RESIDENTIAL UNITS

26-32 Thomas Street

Level III Application for Subdivision and Site Plan Review
Project ID #2015- 131
32 Thomas Street LLC, Applicant

Submitted to:	Prepared by:
Portland Planning Board	Jean Fraser, Planner
Public Hearing Date: December 8th, 2015	Date: December 4th, 2015

I. INTRODUCTION

On behalf of 32 Thomas Street, LLC, Garrison Consulting has requested final approval for the Level III Subdivision and Site Plan application for the conversion of the Williston West Parish House at 26-32 Thomas Street into 5 residential units. The Parish House is part of the Williston West Church complex that was subject of a conditional rezoning in 2012.

The Parish House and former Williston West Church are national and local landmarks and the submission outlines their historic and architectural importance (Attachment D). The Parish House was designed and built by John Calvin Stevens in 1905 to complement the Williston West United Church of Christ, which dates from 1877 and was built by Francis Fassett.

The site (including both the Church and Parish House) totals 17,998 sq ft and is in the R4 zone. It is subject to the 2012 Conditional Zoning Agreement (CZA) (Attachment 1) which was subject to appeal but became operative on December 12, 2014. The CZA allows 2,800 sq ft of professional offices on the first floor of the Parish House with associated conditions including the requirement for a maximum of 14 employees, off street parking and associated monitoring.

The office space on the ground floor is not part of the current review for conversion of the remainder of the building to 5 residential units, except that it should be noted that the proposed parking on site (in the courtyard) is proposed to serve the proposed residential units only and this is documented on the draft Subdivision Plat (Plan P3.).



Vicinity 32 Thomas St.

The proposals create two (2) two-bedroom units and three (3) three-bedroom units and reorganize the courtyard to provide four on-site parking spaces. This proposal also replaces the connector structure (between the two buildings) with a glass enclosed vestibule, with no increase in footprint.

Required reviews and requested waivers:

Review	***Applicable Standards***
Subdivision: Conversion of existing building to 5 residential dwelling units	*Section 14-497* for the division into 5 residential units.
Site Plan: Multifamily development	*Section 14-526* for the proposed multifamily residential development.
Historic Preservation: Actions affecting a Landmark require a Certificate of Appropriateness from the Historic Preservation Board (approved 11.18.2015)	Section 14-634 requires a Certificate of Appropriateness for any exterior alterations or new construction requiring a building permit where it affects a Landmark
Conditional Use: Conditional Use Appeal to add 5 units to the existing structure by the Zoning Board of Appeals (granted 9.3.2015)	Ordinance for Zone R4 14-103 (a) Residential 2. Alteration of an existing structure to accommodate one (1) or more dwelling units is a conditional use.

Waiver Requests to Planning Board	*Applicable Standards*
Parking Drive Aisle: Waiver required for parking drive aisle that is approximately 21 ft in order to minimize impact on the courtyard of Landmark building complex.	Technical Standard 1.14 *Parking Lot and Parking Space Design* require a drive aisle of 24 feet width for 90 degree parking. The Traffic Engineering Reviewer supports this waiver (Att 6).

II. PROJECT DATA

SUBJECT	*DATA*
Existing Zoning	R-4 and Conditional Zoning Agreement
Previous Uses	Religious assembly; daycare; community and social service programs
Existing Use	Approved for office use (part) by CZA- no CO issued
Proposed Use	Residential
Parcel Size	17,998 sq ft
Impervious Surface Area **--Existing** **--Proposed** **--Net Change**	 13,800 sq ft 14,700 sq ft 900 sq ft
Total Disturbed Area	Approx. 15,500 sq ft
Building Footprint **--Existing** **--Proposed** **--Net Change**	 12,000 sq ft 12,000 sq ft 0 sq ft
Building Floor Area **--Existing** **--Proposed** **-Net change**	 19,400 sq ft 20,030 sq ft 630 sq ft (in Parish House top floor)
Residential Mix	2 No. two-bedroom units; 3 No. three-bedroom units
Parking Spaces	4 proposed
Bicycle parking Spaces	0 proposed (2 required)
Estimated Cost of Project	$1,400,000

III. EXISTING CONDITIONS

The three story Parish House is located to the south of the larger Williston West Church and connected to the Church by a brick with sash windows structure. It is in good condition generally and was most recently used as a day care center. The lower front floor has been partially fitted out (but not used) for the 2,800 sq ft of first floor offices allowed under the terms of the Conditional Rezoning Agreement. The Parish House currently has a ramped access to the porch and office part of the ground floor, and a curb cut with one parking space just north of the building.



Parish House



Courtyard just north of Parish House

The large existing parking lot to the west of the Church is owned by the abutter (McLellan School condominiums) and the western property boundary is a few feet from the Williston West buildings.

IV. PROPOSED DEVELOPMENT

The proposals, including floor plans and elevations, are described in Attachments D and E and shown in the Plan set. The increase in floor area derives from infilling of a central mezzanine floor at the third level.

The proposals include relocation of the curb cut to the north; the configuration of the planted areas, pedestrian path and two sets of steps is based on the Historic Preservation Board comments. The proposal includes a replacement connector structure between the Parish House and the Church sanctuary, composed largely of glass. The connector area provides a separate access to the 5 proposed dwellings units and an area behind it for trash storage.

The courtyard proposals were subject to review by the Historic Preservation Board and the plans presented in this report reflect the minor detailed amendments requested by the HP Board as part of their approval on November 18, 2015 (Attachment 8). The HP requests included a pedestrian path of a different material but flush between the sidewalk and the connector entrance to replicat an historic walkway at that location, and revised planting details.



V. PUBLIC COMMENT

The applicant held a Neighborhood Meeting on September 1, 2015 which was attended by about 32 neighbors; the Neighborhood Meeting Certificate will be available at the hearing. This hearing was noticed to 224 neighbors and interested parties, and the public notice appeared in the *Portland Press-Herald* on November 30th and December 1st , 2015. Two written public comments were received near the time of the Planning Board Workshop on this project (PC1 and PC2), but while both supported the residential use they also raised legal issues related to the Conditional Zoning Agreement. These are the subject of discussion with the City's Legal Department, and the Associate Corporation Counsel Jennifer Thompson will be available at the hearing to answer questions and/or advise the Board.

VI. RIGHT, TITLE AND INTEREST AND FINANCIAL CAPACITY

a. The owner of the property is 32 Thomas Street, LLC. The applicant has provided a copy of warranty deed (Attachment B) , which demonstrates their right, title and interest in the property.

b. The estimated cost of the development is $1,400,000. The applicant has submitted a letter from the Androscoggin Bank, dated 08.11.2015 (Attachment C) as demonstration of their financial capacity to complete the proposed development.

VII. STAFF REVIEW

A. ZONING ASSESSMENT

The proposals constitute a conditional use under the R4 zoning ordinance and the Zoning Board of Appeals has approved this conditional use in early September (Attachment 2). The Conditional Zone Agreement (CZA) (Attachment 1) modified the dimensional requirements that apply to the site so that the existing buildings are conforming.

The office use is not subject to further review as it is allowed and regulated by the Conditional Use Agreement.

B. SUBDIVISION STANDARDS

14-496. Subdivision Plat Requirements

The submissions meet the requirements and include a draft subdivision plat (Plan P3.). The proposals are currently envisaged as apartments for rent so the submission does not include condominium documents.

14-497. General Requirements (a) Review Criteria

1. Will Not Result in Undue Water and Air Pollution (Section 14-497 (a) I), and Will Not Result in Undue Soil Erosion (Section 14-497 (a) 4)
   Staff finds the proposed project is in conformance with this standard.

2. Sufficient Water Available (Section 14-497 (a) 2 and 3)
   The applicant is awaiting a capacity letter from the Portland Water District (PWD), although understands from previous discussions that there are 6 inch water mains in both Thomas and Carroll Streets. They anticipate that there is adequate capacity, but the Fire Department has requested PWD confirmation that the flows are adequate given the proposal for a sprinkler system and the age of the existing water mains (Attachment 5).

3. Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)
   The staff finds the proposal will not cause unreasonable traffic congestion.

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)
   Public Works staff are concerned that the combined sewer in the vicinity of this project is overloaded and have requested a backflow preventer and stormwater infiltration to offset the extra wastewater flows (Attachment 7). The applicant had originally proposed a shallow raingarden within the parking area, but this has been revised to comprise a stone infiltration bed under the parking area, as shown in Plan P4 and as based on calculations in Attachment J).

5. Scenic Beauty, Natural, Historic, Habitat and other Resources (Section 14-497 (a) 8)
   The proposed project will not have an adverse effect on the scenic or natural beauty of the area, thus the proposed project is in conformance with this standard.

6. Comprehensive Plan (Section 14-497 (a) 9)
   The following housing policy is relevant to this proposal and the staff finds the proposed project for 5 residential rental units is in conformance with this standard.

   Housing: Sustaining Portland's Future contains a number of policies regarding residential developments:
   - Ensure the construction of a diverse mix of housing types that offers a continuum of options across all income levels, which are both renter and owner-occupied. The list of potential housing options under this policy:
     ii. Housing units for decreasing household sizes, such as young professionals, empty nesters, single parent households and senior citizens;
     iii. Medium and high priced options for the "move-up" market;

v. Higher density housing, such as row houses, small lots, reuse of non-residential buildings, and mixed use buildings;
vi. Rental units for large families with children;

- Encourage higher density housing for both rental and home ownership opportunities, particularly located near services, such as schools, businesses, institutions, employers and public transportation.
- Increase Portland's rental housing stock to maintain a reasonable balance between supply and demand yielding customer choice, affordable rents, and reasonable return to landlords.

7. Financial Capability (Section 14-497 (a) 10)
Please see above under Section VI. The applicant has provided evidence of financial capability, so the staff finds the standard has been met.

8. Subdivision Plat
The subdivision plat (Plan P3.) has been reviewed by staff. The plat is generally complete but staff recommend that Note 4 "*The 4 on-site parking spaces are dedicated for residential use. One Parking space shall be dedicated for units 2, 3, 4 & 5*" should be amended to read "*The 4 on-site parking spaces are dedicated for use by the occupants of the residential units only. One parking space will be dedicated to units 2, 3, 4 & 5."*

The Board may wish to ensure that the parking spaces are not leased out to other parities who are not occupying the proposed residential units, in which case the word "***exclusive** use by the occupants of the residential units only.*

A recommended condition of approval calls for the plat to be finalized to address the Board and staff comments and submitted for review by the Planning Authority, Department of Public Works and Corporation Counsel prior to the signature of the Planning Board.

C. SITE PLAN STANDARDS - 14-526 Requirements for approval
The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations.

Transportation Standards

Impact on Surrounding Street Systems and Access and Circulation
The proposals generate a small amount of traffic and this is not a concern. The plans relocate the curb cut further north and create 4 parking spaces within the courtyard area (Plans P4, P5 and P6).

The layout of the parking area was the subject of extensive discussion with the Historic Preservation Board as they considered the area should be as small as possible to reduce intrusion into the architectural quality of the Church and Parish House complex. The Historic Preservation Board were advised that the Site Plan reviewer for traffic (Tom Errico) would be flexible regarding the parking maneuvering area to help meet historic objectives.

The final layout includes differentiated paving as a pedestrian way to the new connector and entrance, but this is designed to be flush thus giving a parking aisle of 21 feet in width (compared to the standard of 24 feet). Mr Errico has confirmed that he supports the waiver and the parking layout and access arrangements are satisfactory subject to revising the cross slopes in the apron so that it is 2% along the pedestrian route of the sidewalk (Attachment 6). A suggested condition of approval requests this revision.

Pedestrian accommodations
Reviewers (Attachments 3 and 6) had previously requested that the existing crosswalk be upgraded with ADA compliant tip downs on both ends. The applicant's final plans incorporate the existing crosswalk and propose the ADA ramps be installed as requested (Attachment F and Plan P4). Mr Errico has requested some slight revisions to the detail of the ramps (Attachment 6) and this is addressed in a suggested condition of approval.

The applicant was asked if an ADA compliant ramped access could be incorporated for the residential entrance. The applicant investigated this and concluded in Attachment D (page 10) that an ADA compliant ramp for the residential units was not practical, but that the ramp to the offices would be ADA compliant and that a location for a future ramp to the sanctuary had been identified (on NW corner- see Plan P6) in the event it is required for a future (approved) use.

Vehicle parking
There is no requirement for off-site parking for the proposed new 5 dwelling units, as the site is within an historic district. However, the applicant is sensitive to the pressure for on-street parking in the area and is proposing 4 parking spaces within the courtyard to support the new dwelling units (Plans P4, P5 and P6). The proposed layout of the four spaces has been approved by the Historic Preservation Board (Attachment 8) and the Traffic Engineering Reviewer Tom Errico has confirmed it is satisfactory (Attachment 6).

The Draft Subdivision Recording Plat (Plan P3) *note 4* confirms that these spaces are for the proposed residential units and not for the offices on the ground floor; a potential minor clarifying amendment to this wording is recommended in section VII (B) 8 above. The CZA requires the offices to report to the City as to the provision of off-street parking for any employees who arrive by car.

The relocation of the curb cut results in one additional on-street public parking space and a suggested condition of approval refers to the requirement for a detailed plan that will be the basis for seeking City Council approval to the amending the City's Traffic Schedule.

Bicycle Parking
The proposals do not include any bicycle parking and the ordinance requirement would be for a bike rack that can hold 2 bicycles. The final plans do not indicate the location of a bicycle rack, so a potential condition of approval requires that one be installed to accommodate two bicycles.

Snow Storage
There is limited on-site space for snow storage and the submissions do not address this question. A potential condition of approval requests clarification of the applicants proposals for snow storage/snow removal.

Transportation Demand Management - does not apply to this proposal.

Environmental Quality Standards

Preservation of Natural Features; Landscaping and Screening
This element of the proposal is subject to Historic Preservation Board review as it impacts a Landmark. The plans included in this Report have been reviewed by the Historic Preservation Program Manager and she has confirmed they reflect the recommendations of the Historic Preservation Board (Attachment 8).

Street Trees
The site has 5 street trees already within the Right of Way and therefore the project has met this requirement. However, an existing street tree well on Carroll Street no longer has a tree within the well and the applicant has proposed "bricking in" the tree well. Jeff Tarling, the City Arborist, has recommended that the tree be replaced by the applicant instead of the infill brickwork (Attachment 4), and this request is included in a suggested condition of approval.

Water quality, Stormwater Management and Erosion Control
The applicant is increasing the impervious surface by approximately 900 sq ft and is not required to incorporate stormwater management/ treatment proposals. The Department of Public Works requested that the roof drains be confirmed as directed to ground and not to the sewers (Attachment 3), and the submitted site plan has clarified that they will be directed to the ground (Plan P4.) An infiltration bed under part of the parking lot is proposed to address the local issues with the combined sewer and stormwater system serving the project, as discussed above in Section Vii (B) 4.

Public Infrastructure and community safety standards

Public Infrastructure/master Plan
The Department of Public Works has noted the need to address the open area in the sidewalk where a street tree was previously removed. The City Arborist has confirmed that a replacement tree is preferred over the infill brick (see above).

Public Safety including CPTED
The applicant has added low level bollard lighting around the parking area and this addressed the previous staff recommendation for some external lighting of walkways and entrances. However, the proposed lamp and bollard fixtures are still under review to ensure compliance with the City's Technical Standards for Site Lighting.

Fire Prevention
The final Fire Department comments in Attachment 5 focus on the need for information from the PWD on the available water supply, as the proposal will include a sprinkling system in addition to water supply for five units (Attachment 5). In previous comments the Department had also requested clear addressing.

Public Utilities
The applicant has had extensive discussions with CMP to determine how best to serve the new project with three phase electrical service, as outlined in Attachment F. The site plan (Plan P4) shows the options under consideration but has removed the references to the service being underground between the ROW and the buildings. The Draft Plat in Plan P3. confirms that the service will be underground between the ROW and the building as required by the subdivision ordinance technical sections. The DPS comments in Attachment 3 request that the existing overhead lines (primarily referring to one at the rear of the buildings) should be shown as removed and reiterates the subdivision requirement for undergrounding of the service.

The water and sewer service capacity letters have been referenced in Section VII above.

Site Design Standards

Massing, Ventilation and Wind; Shadows; Snow and Ice Loading; View Corridors - Do not apply to this project.

Impact Historic Resources
The Historic Preservation Board held a Hearing on the proposals on November 18, 2015 and approved the proposals subject to conditions. The Historic Preservation Program Manager has confirmed that the site plans as presented in this report satisfy all of the HP conditions (Attachment 8). A suggested condition of approval is the submission of the HP Certificate of Appropriateness prior to the issuance of a building permit.

Exterior Lighting
The applicant has submitted specification for recessed ceiling downlights, low level floodlights, and bollard lighting (Attachment H). While these appear acceptable in principle, it is difficult to confirm from these specifications that the floodlights and bollards meet the City's Technical Standards for site lighting- they do not appear to be "cut off" and the LED light levels need further assessment in view of the sensitive residential environment. A suggested condition of approval requests further information to allow final review and approval by Planning staff.

Noise and Vibration and Signage and Wayfinding - not applicable to this project.

Design Standards
The project is required to meet the following standards:

(i) ***TWO-FAMILY, SPECIAL NEEDS INDEPENDENT LIVING UNITS, MULTIPLE-FAMILY, LODGING HOUSES, BED AND BREAKFASTS, AND EMERGENCY SHELTERS:***

(1) ***STANDARDS.*** *Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts, and emergency shelters shall meet the following standards:*
a. Proposed structures and related site improvements shall meet the following standards:

1. The exterior design of the proposed structures, including architectural style, facade materials, roof pitch, building form and height, window pattern and spacing, porches and entryways, cornerboard and trim details, and facade variation in projecting or recessed building elements, shall be designed to complement and enhance the nearest residential neighborhood. The design of exterior facades shall provide positive visual interest by incorporating appropriate architectural elements;

a. The proposed development shall respect the existing relationship of buildings to public streets. New development shall be integrated with the existing city fabric and streetscape including building placement, landscaping, lawn areas, porch and entrance areas, fencing, and other streetscape elements;

Staff comment: The only proposed new structure is the replacement of the existing connector building, which has been subject to in appropriate modifications in the past, with a glass vestibule structure that is designed to allow the two main buildings to read as separate. This new structure was subject to review by the Historic Preservation Board and therefore meets this standard.

3. Open space on the site for all two-family, special needs independent living unit, bed and breakfast and multiple-family development shall be integrated into the development site. Such open space in a special needs independent living unit or a multiple-family development shall be designed to complement and enhance the building form and development proposed on the site. Open space functions may include but are not limited to buffers and screening from streets and neighboring properties, yard space for residents, play areas, and planting strips along the perimeter of proposed buildings;

Staff comment: The courtyard and landscape improvements address this requirement.

4. The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principal living areas and shall also provide sufficient storage areas;

Staff comment: This standard appears to be met.

5. The scale and surface area of parking, driveways and paved areas are arranged and landscaped to properly screen vehicles from adjacent properties and streets;

Staff comment: The Historic Preservation Board review has retained the screening function of the landscape.

IX. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed subdivision and site plan for five residential units proposed to be created within the existing Parish House at 26-32 Thomas Street.

X. PROPOSED MOTIONS FOR THE BOARD TO CONSIDER

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 application on December 8, 2015 for application #2015-131 (26-32 Thomas Street) relevant to Portland's Technical and Design Standards and other regulations, and the testimony presented at the Planning Board hearing:

1. ***Parking Drive Aisle:*** The Planning Board (**waives/does not waive**) *Technical Manual Section 1.14. Parking Lot and Parking Space Design*, which requires a drive aisle of 24 feet width for 90 degree parking, to allow a parking aisle of 21 feet as supported by the Traffic Engineering Reviewer.

B. SUBDIVISION 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 December 8, 2015 for application #2015-131 (26-32 Thomas Street) relevant to the Subdivision regulations, and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan (**is/is not**) in conformance with the subdivision standards of the land use code and (**approves/does not approve**) the application, subject to the following condition of approval:

i. The applicant shall finalize the subdivision plat to address Board and staff comments, and to confirm that the 4 on-site parking spaces are for the use of the occupants of the proposed residential units only; the final plat to be submitted for review and approval by Corporation Counsel, Department of Public Works, and the Planning Authority prior to signature by the Planning Board.

C. SITE PLAN 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 December 8, 2015 for application #2015-131 (26-32 Thomas Street) 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:

i. That the applicant shall submit a copy of the final Historic Preservation Board Certificate of Appropriateness to the Planning Authority prior to the issuance of a building permit; and

ii. That the applicant shall revise and submit the plans to show the final CMP connection and underground service to the Parish House, to show that all the existing overhead lines on the site will be removed, and to clarify regarding snow removal, for review and approval by the Planning Authority and the Department of Public Works prior to the issuance of a building permit; and

iii. That the applicant shall submit a plan showing the design and location of a bicycle rack to accommodate two bicycles, meeting the specifications in the City's Technical Manual, for review and approval by the Planning Authority and Historic Preservation Program Manager prior to the issuance of a building permit; and

iv. That the applicant shall submit a revised plan to address the comments of the Traffic Engineering Reviewer Tom Errico dated 12.4.2015 regarding the sidewalk (crosswalk) ramps, and slopes within the relocated sidewalk apron, for review and approval by the Planning Authority prior to the issuance of a building permit; and

v. That the applicant shall plant a street tree in the existing empty tree well in the Carroll Street ROW instead of filling the tree well in with brick; the size and species of the new street tree to be agreed with the City Arborist and it shall be planted prior to the issuance of a Certificate of Occupancy; and

vi. That the applicant shall submit a revised on-street parking layout that takes account of the revised curb cut for review and approval by the Planning Authority prior to the issuance of a Certificate of Occupancy. It should be noted that any changes to on-street parking will require City Council action prior to the issuance of a Certificate of Occupancy, and the applicant would be required to assist in preparing council meeting materials; and

vii. That the Portland Water District capacity letter, that includes information on the flows and pressure of the water supply, shall be submitted to the Planning Authority prior to the issuance of a building permit; and

viii. That the applicant shall submit additional lighting information regarding the floodlights and bollards to confirm that they comply with the City's Site Lighting Standards in Section 12 of the Technical Manual, with the final lighting proposals subject to further discussion and approval by the Planning Authority and Historic Preservation Program Manager prior to installation.

ATTACHMENTS:

Attachments to Memorandum

1. Williston West Conditional Zoning Agreement (CZA)
2. ZBA Decision Letter
3. DPS (David Margolis-Pineo) final comments
4. City Arborist final comments 12.2.2015
5. Fire Dept final comments 12.2.2015
6. Traffic Engineering final comments
7. DPW Wastewater Capacity approval & comments
8. HP Program Manager confirmation re HP approval 12.2.2015

Public comments

PC 1 Orlando Deluge 10.12.2015
PC 2 Charles Remmel 10.16.2015

Applicant's Submittal

A. Application
B. Right, Title and Interest (Warranty Deed)
C. Financial Capability letter

D. Project Description (updated 11.30.15)
E. Site Plan issues analysis
F. Additional information re parking and CMP
G. Fire Department Memo with information
H. Lighting Specifications
I. Wastewater Capacity Application
J. Infiltration Calculations

Plans

P1. Boundary Survey
P2. Existing Conditions
P3. Draft Recording Plat
P4. Site Plan
P5. Rendered Site Plan
P6. Landscape & Planting Plan
P7. Floor Plans
P8. Elevations
P9. Turning Templates for parking

Recorded July 26, 2012 at 2:46 p.m.
Book 29784, Page 123

CONDITIONAL ZONE AGREEMENT
RE:
WILLISTON-WEST CHURCH

AGREEMENT made this 13th day of July, 2012 by 32 Thomas Street, LLC, 477 Congress St., Suite 601, Portland, Maine ("Developer"), and its successors and assigns.

W I T N E S S E T H

WHEREAS, the Developer owns real property located at 32 Thomas Street, consisting of the parcel shown on the City's Tax Map 62, Block E, Lot 5, being more particularly described in a deed recorded in Cumberland County Registry of Deeds in Book 29217, Page 171 (collectively the "Property"); and

WHEREAS, the existing building complex located on the Property was formerly used as the Williston-West Church; and

WHEREAS, the Property, located within the West End Historic District, is currently zoned R-4 Residential; and

WHEREAS, the properties on the opposite sides of Thomas and Carroll Streets, directly across from the Property, are zoned R-6 Residential; and

WHEREAS, the building complex located on the Property is comprised of two principal portions, the sanctuary and the parish house; and

WHEREAS, the building complex is listed in the National Register of Historic Places, the sanctuary is a designated local landmark as defined by Article IX of the Portland City Code and the parish house is a contributing structure within the West End Historic District under Article IX; and

WHEREAS, the sanctuary and the parish hall are important, unique, large-scale, non-residential historic structures that were designed by noted architects Francis Fassett and John Calvin Stevens respectively; and

WHEREAS, the building complex significantly contributes to the architectural fabric of the neighborhood and distinctive sense of place that defines Portland and therefore requires special consideration with regard to its rehabilitation and preservation; and

WHEREAS, the standards of review for alterations of historic structures set forth in Portland City Land Use Code (the "Code") §14-650 include the following: (a) Every reasonable effort shall be made to provide a compatible use for a property which requires minimal alteration to the character-defining features of the structure, object or site and its environment or to use a property for its originally intended purpose; and (b) The distinguishing original qualities or character of a structure, object or site and its environment shall not be destroyed. The removal or

alteration of any historic material or distinctive architectural features should be avoided when possible.

WHEREAS, the building complex located on the Property is falling into a state of disrepair; and

WHEREAS, historically appropriate and neighborhood compatible adaptive re-use of historic religious structures is often challenging, and reasonable use flexibility may enable economically viable rehabilitation and productive use of such buildings for their long term preservation; and

WHEREAS, the City's comprehensive plan includes the following stated goals: to preserve Portland's architectural and historic heritage; to promote an economic climate which increases job opportunities and overall economic well-being; and to preserve and enhance the quality and vitality of neighborhoods within and adjacent to the Downtown; and

WHEREAS, offices in residential zones, particularly in the R-4 zone, have been limited and any allowance of an office use in the R-4 zone should only be considered for large, unique, and historically significant structures which have not previously been in residential use, and must be carefully considered and controlled to achieve an appropriate balance between policies supporting neighborhood preservation and policies supporting economic development and preservation of the City's architectural and historic heritage; and

WHEREAS, the Developer proposes and intends to rehabilitate the parish house to provide for a family residence on the second and third floors, and a caretaker residence and office space on the first floor, as illustrated in Exhibit A attached hereto; and

WHEREAS, the Developer proposes and intends to rehabilitate, preserve and maintain the sanctuary and to use the building as a community hall for limited community uses; and

WHEREAS, the Developer intends to maintain the historic character of the structures and Property and will commit to a rehabilitation schedule of improvements to the building complex to address immediate needs to ensure the soundness and integrity of the building envelope and structural elements, and intends to perform additional improvements to the building complex to prolong its useful life and preserve the historic character, all with the goal of extending the useful life of the building complex for a time period approaching fifty (50) years or longer; and

WHEREAS, the existing zoning is R-4 which has dimensional requirements that the existing building complex does not meet, but is lawfully nonconforming; and

WHEREAS, the proposed use of the building complex by the owner/Developer includes an office component that is a necessary economic value and program element for the feasibility of the productive use of the building complex and the associated rehabilitation investments; and

WHEREAS, the Developer has requested a rezoning of the Property in order to permit the proposed development of the Property which will facilitate funding the comprehensive rehabilitation and long-term maintenance of the historic structures; and

WHEREAS, the proposed uses of the Property are consistent with the existing and permitted uses in the neighborhood, which include a mix of residential, commercial and institutional uses; and

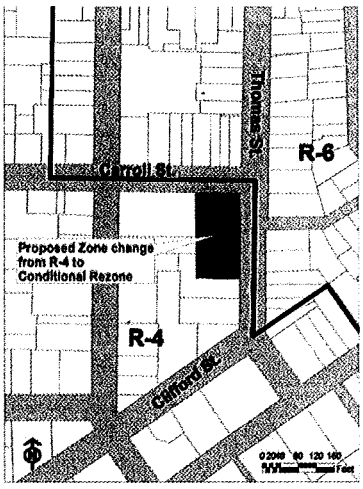
WHEREAS, the Planning Board, after notice and hearing and due deliberation thereon, recommended the rezoning of the Property as aforesaid, subject, however, to certain conditions contained in this AGREEMENT; and

WHEREAS, the Portland City Council, pursuant to 30-A M.R.S.A. § 4352(8) and §§ 14-60 to 14-62 of the Code, after notice, hearing and due deliberation thereon, has determined that because of the unusual nature and unique location of the proposed development, and its minimal impact on and compatibility with the surrounding community, it is necessary and appropriate to recommend the rezoning of the Property as aforesaid, with the following conditions and restrictions set forth in this AGREEMENT; and

WHEREAS, the Portland City Council has on June 18, 2012 approved this Agreement in its entirety, by City Council Order No. 214-11/12, a true copy of which is attached hereto as Attachment 1 (the "Order");

NOW, THEREFORE, in consideration of the rezoning, the Developer covenants and agrees as follows:

1. Pursuant to the Order, the City shall amend the Zoning Map of the City of Portland, dated September, 2000 (as amended from time to time and on file in the Department of Planning and Urban Development, and incorporated by reference into the Zoning Ordinance by § 14-49 of the Code) by adopting the map change amendment shown below to zone the property conditional R-4, subject to the conditions contained below.



Conditional Rezoning from R-4
32 Thomas Street
(Williston West Church building complex)

If this Agreement is not recorded within sixty (60) days after the effective date of the City Council's approval of the Order, then the conditional rezoning shall become null and void and the zoning of the Property shall revert to the pre-existing R-4 zone.

2. Permitted uses:

   a. All uses allowed in the R-4 zone.

   b. Professional offices, including computer software programming and marketing, and excluding personal services, retail services and veterinarians, subject to the following limitations:

      (1) Professional offices shall be located on the first floor of the parish house and shall occupy no more than 2,800 square feet of floor area.
      (2) The total number of individuals working in the professional offices shall not exceed fourteen (14) non-resident employees regularly scheduled to occupy the premises at any one time.
      (3) The business utilizing the office space shall be a single tenant office user owned by or affiliated with the owner of the building complex.
      (4) The office use shall not generate frequent daily visitation by clients, customers, or the general public.
      (5) The owner or operator of the business shall secure and provide to its employees one (1) off street parking space for each employee who commutes to the office by his or her automobile.

3. Use of the sanctuary as a community hall shall be reviewed as a conditional use by the Planning Board, which may place limitations on the use of the sanctuary as a community hall, in addition to the requirements for community halls set forth in section 14-103(b)(2)(e). Said limitations may include, but are not limited to the following:

a. Occupancy load;
b. Hours and days of operation;
c. Record keeping and reporting;
d. Number of organizations that may be entitled to regular use of the community hall at any one time;
e. Noise level as the property line; and
f. Service of alcohol.

4. The underlying dimensional requirements of the R-4 zone shall apply and are modified as follows:

a. Minimum Lot Size for place of assembly and professional office uses combined: 17,500 square feet.

b. Minimum Yard Dimensions:

1. Front yard: 3 feet.
2. Rear Yard: 3 feet.
3. Side Yard: 4 feet
4. Side Yard on Side Streets: 8 feet.

c. Maximum Lot Coverage: 90%.

d. Maximum Structure Height (Sanctuary): 37 feet.

e. Maximum Structure Height (Parish House): 46 feet.

f. Maximum Structure Height (Bell Tower): 70 feet.

g. Maximum Floor Area for Places of Assembly: 6,000 sq. ft.

h. Residential dwellings within the existing structures shall be governed by the provisions of Section 14-103(a)(2) of the underlying R-4 zone. Density calculations for residential use shall be based on the lot size of the parcel without land area deductions for other non-residential uses on the site.

5. Any increase in the volume or footprint of either the parish house or the sanctuary shall be prohibited.

6. Subject to receiving all necessary regulatory approvals, the Developer shall rehabilitate the Property in accordance with the Rehabilitation Schedule and related elevation drawings A-1 through A-8, attached hereto as Exhibit B, in keeping with the standards of Article IX, Historic Preservation, of the Portland City Code and as shall be reviewed and approved by the Historic Preservation Board or staff under the terms of this Article. Rehabilitation shall commence within six (6) months of [date of enactment] and shall be completed within twenty-four (24) months of [date of enactment]. Any rehabilitation improvements required by this

AGREEMENT not completed before the issuance of the certificate of occupancy for the office use shall be secured by a performance guarantee in the form of an escrow account, letter of credit, or equivalent surety approved by the Corporation Counsel of the City of Portland, in an amount equal to the estimated cost of completion of such improvements. Such performance guarantee shall be reduced by the City upon completion of improvement phases, but shall not be reduced to less than the estimated cost of any incomplete required improvements. In the event that the owner/developer fails to execute the required improvements by the time specified herein, unless granted an extension in writing from the Planning Authority of the time to complete for good cause and not to exceed an additional twelve (12) months, then the City of Portland or its designee shall have the right to utilize the proceeds of the performance guarantee to hire a competent contractor to complete such improvements. In such event, the Planning Authority shall have the right to review and approve the work scope consistency with the required improvements of Exhibit B, the specifications and methods of such work items, and contractor qualifications.

7. If any required approval, including the City Council's approval of this AGREEMENT, has been appealed or becomes the subject of litigation, then the required performance time frames contained in this AGREEMENT shall be measured from the final disposition of any such appeal or litigation. Failure, however, to commence the rehabilitation improvements or post the performance guarantee within the timeframes stipulated in this paragraph and/or paragraph 13 shall result in the reversion of the subject property to the underlying R-4 zone and this AGREEMENT shall be null and void.

8. The provisions of this AGREEMENT are intended to replace and/or supersede the associated provisions of the underlying R-4 zone. As stated above, to the extent not otherwise altered herein, the zoning requirements for the R-4 zone shall otherwise apply to the Property.

9. For a period of five (5) years from [date of enactment], Developer shall submit an annual report to the Planning Authority which shall include the number of employees working at the premises, the location and number of secured off street parking spaces, and other items pertaining to compliance with provisions of this AGREEMENT as required by the Planning Authority. Thereafter, to the extent the Planning Authority requires additional information/report(s) the Developer shall provide the Authority with any such additional information/report(s).

10. The Developer shall replace and/or repair the sidewalk and all other public property surrounding the entire Property if said sidewalk or other public property is damaged as a result of construction on the Property including, but not limited to, construction of the residential and office uses described in this AGREEMENT.

11. Under no circumstances shall the Developer be permitted to convert any residential property in the R-4 zone to an institutional use.

12~~10~~. In the event of a breach by the Developer or its successors or assigns of the provisions contained herein (whether the Zoning Administrator, the Zoning Board of Appeals or a Court determines such breach), the Planning Board, after notice and hearing, may review the

circumstances of the breach and recommend to the City Council that this AGREEMENT be amended or be rescinded and determine that such rescission should result in the termination of this AGREEMENT and a reversion of the Property to the R-4 zone requirements in place before the execution of this AGREEMENT.

13~~11~~. This AGREEMENT may also be enforced pursuant to the land use enforcement provisions of state law including, but not limited to, 30-A MRSA § 4452 and the Portland City Code.

14~~12~~. The above stated restrictions, provisions, and conditions are an essential part of the rezoning, shall run with the Property, shall bind and benefit the Developer, any entity affiliated with the Developer that takes title to the Property, its successors and assigns, and any party in possession or occupancy of said Property or any part thereof, and shall inure to the benefit of and be enforceable by the City of Portland, by and through its duly authorized representatives. The Developer shall file a counterpart original of this Agreement in the Cumberland County Registry of Deeds.

15~~13~~. The Planning Authority shall be notified of any potential and/or pending sale of the Property (which most likely will be evidenced by a Purchase & Sales Agreement or its equivalent), and prior to closing the sale of the Property shall meet with the buyer and verify that he/she/it has read, understood and agrees to be bound by the terms, conditions, limitations and provisions of this AGREEMENT, and said buyer shall so state in a signed affidavit to be kept on file with the Planning Authority.

16~~14~~. If any of the restrictions, provisions, conditions, or portions thereof set forth herein is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed as a separate, distinct, and independent

provision and such determination shall not affect the validity of the remaining portions hereof.

17~~15~~. Except as expressly modified herein, the development shall be governed by and comply with the provisions of the Portland City Code, including but not limited to, the maintenance requirements for historic structures set forth in section 14-690 of the Code, and any applicable amendments thereto or replacement thereof.

[Signatures to Follow on Next Page]

WITNESS:

32 THOMAS STREET, LLC

BY:

STATE OF MAINE
CUMBERLAND, ss.

July 13, 2012

Personally appeared before me the above-named Sebastian Gerard James, in his/~~her~~ capacity as Director of 32 THOMAS STREET, LLC, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity and the free act and deed of said corporation.

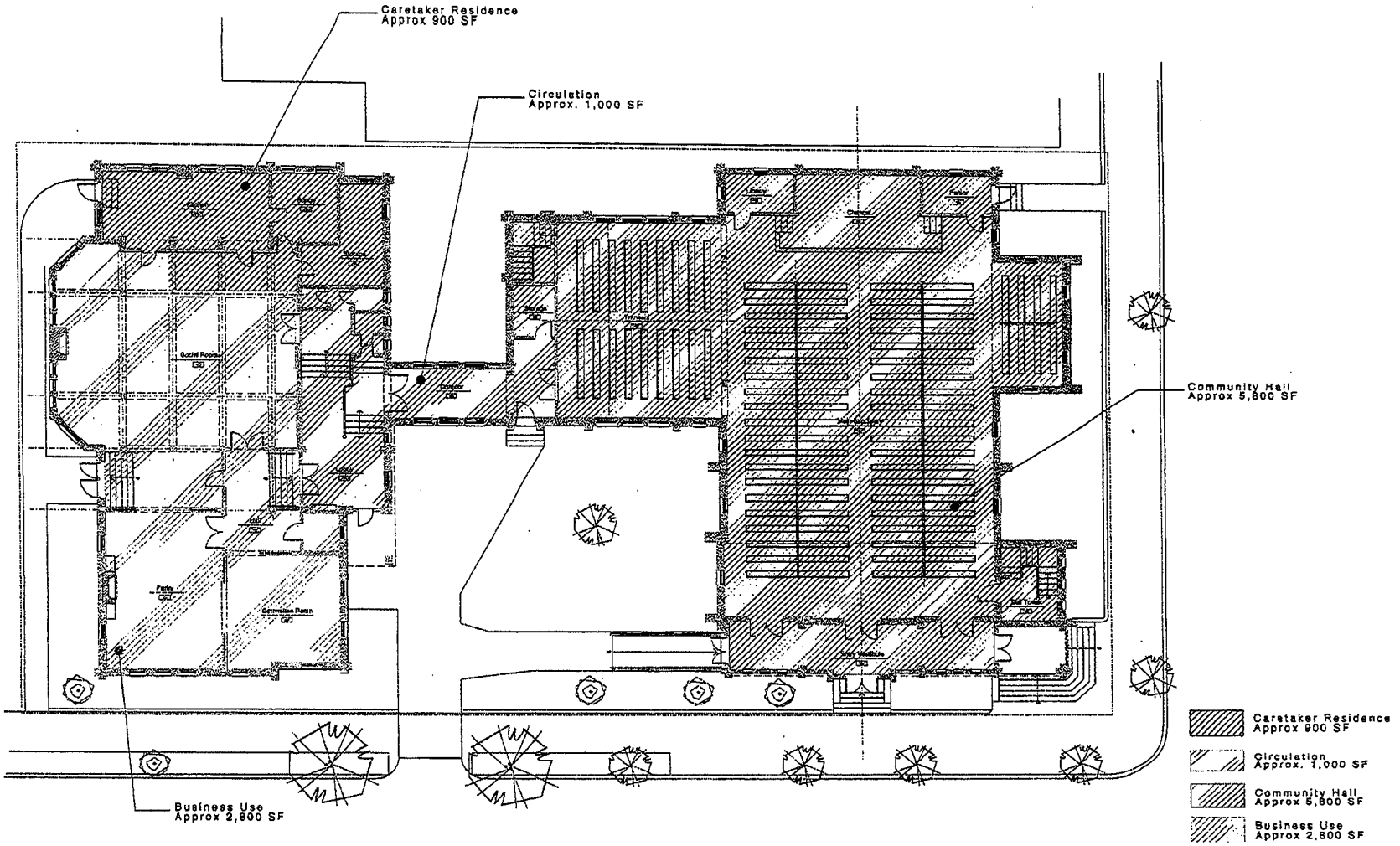
Before me,

Notary Public/~~Attorney at Law~~

RUTH E. EARLEY
My Comission Expires September 9, 2012

EXHIBIT A

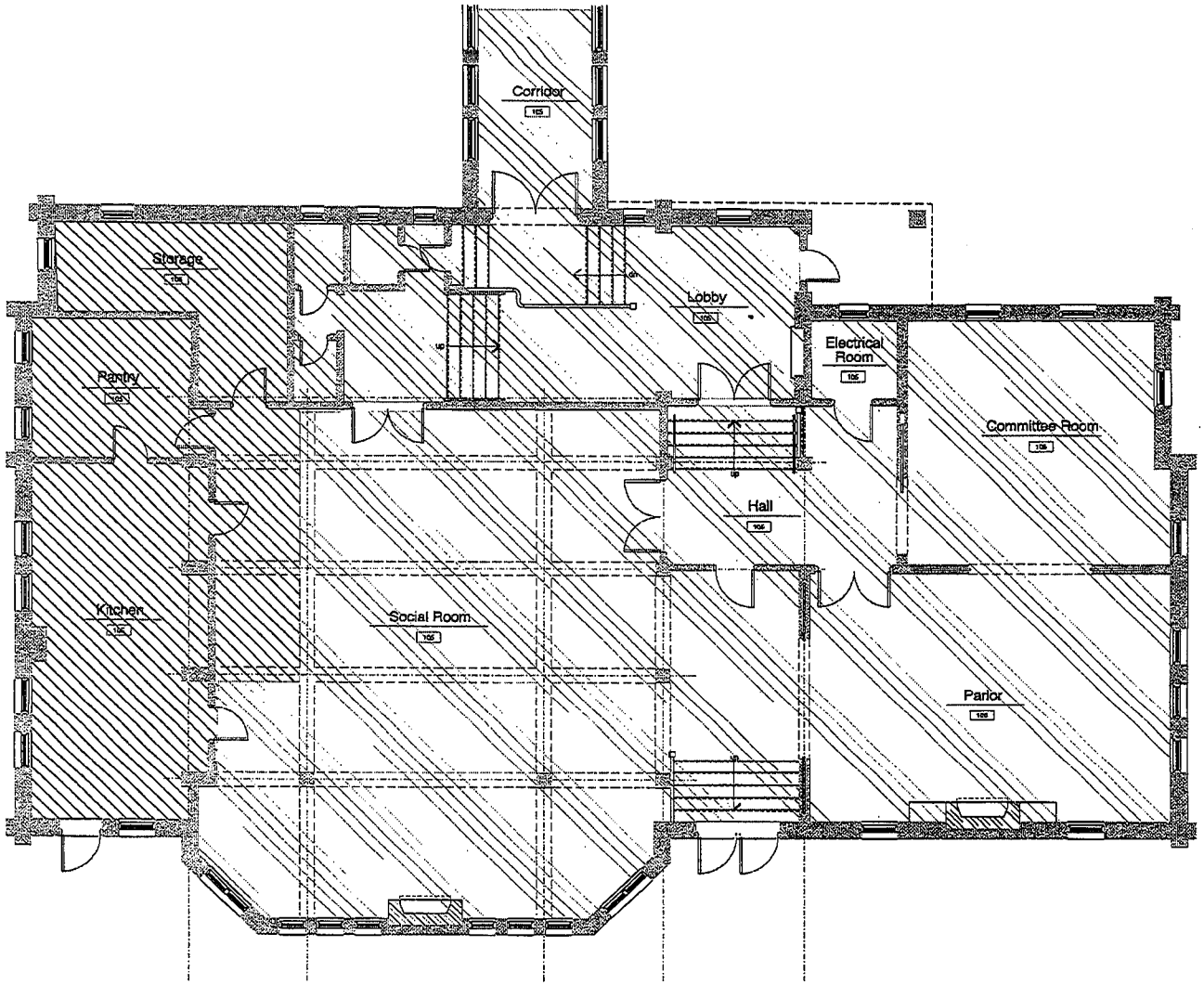
FLOOR PLANS



GARRISON CONSULTING
41 edgewood ave
portland, maine 04103
telephone 207 450 0760
e-mail matthewwinch@earthlink.net

Williston West
32 Thomas Street LLC
92 Thomas Street
Portland, Maine

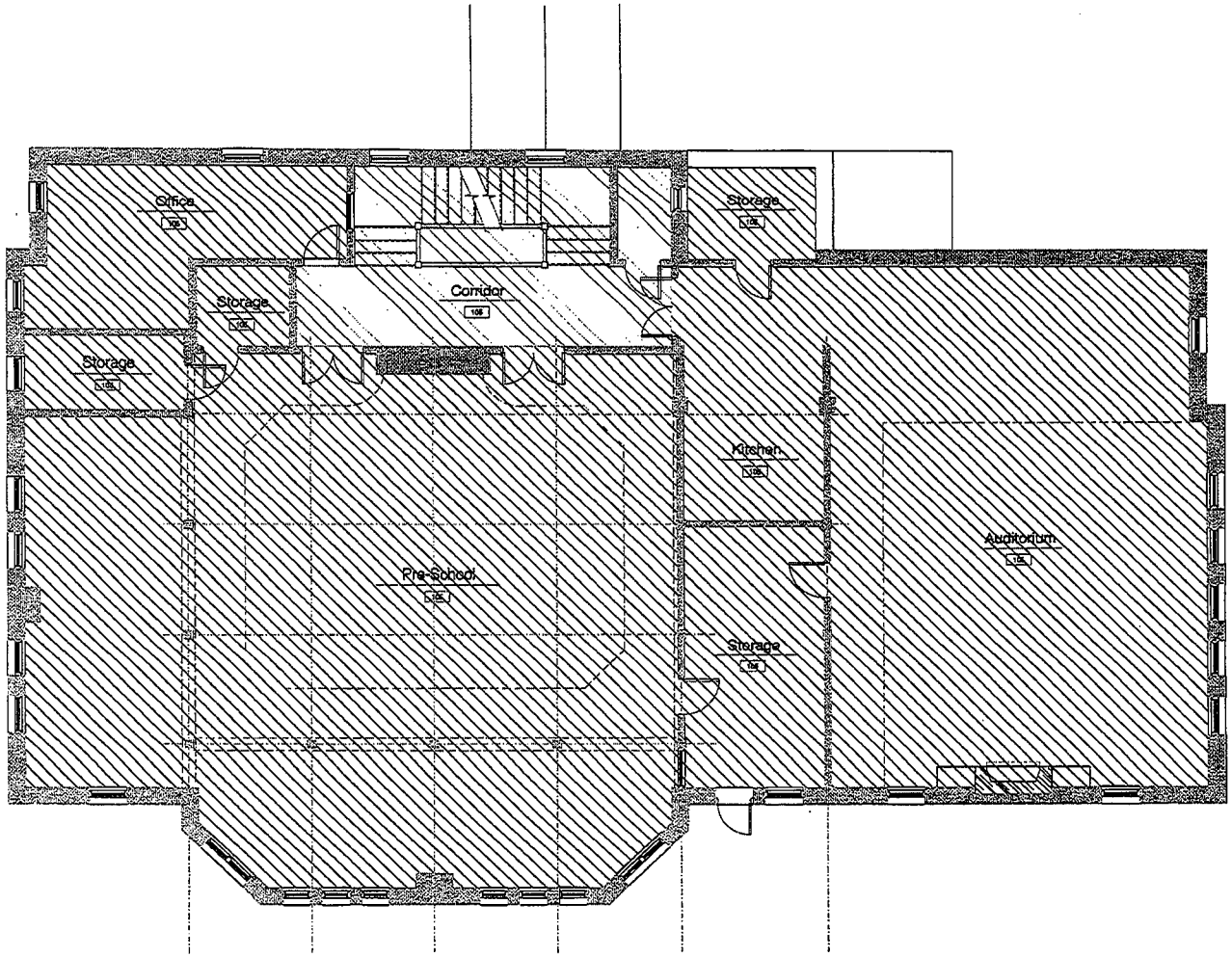
date February 16, 2012
scale 1/8" = 1'-0"
project # 2011-018
drawing title Ground Floor Plan
A101



GARRISON CONSULTING
41 edgewood ave
portland, maine 04103
telephone 207 490 0760
e-mail mail@garrisonlink.net

Williston West
32 Thomas Street LLC
32 Thomas Street
Portland, Maine

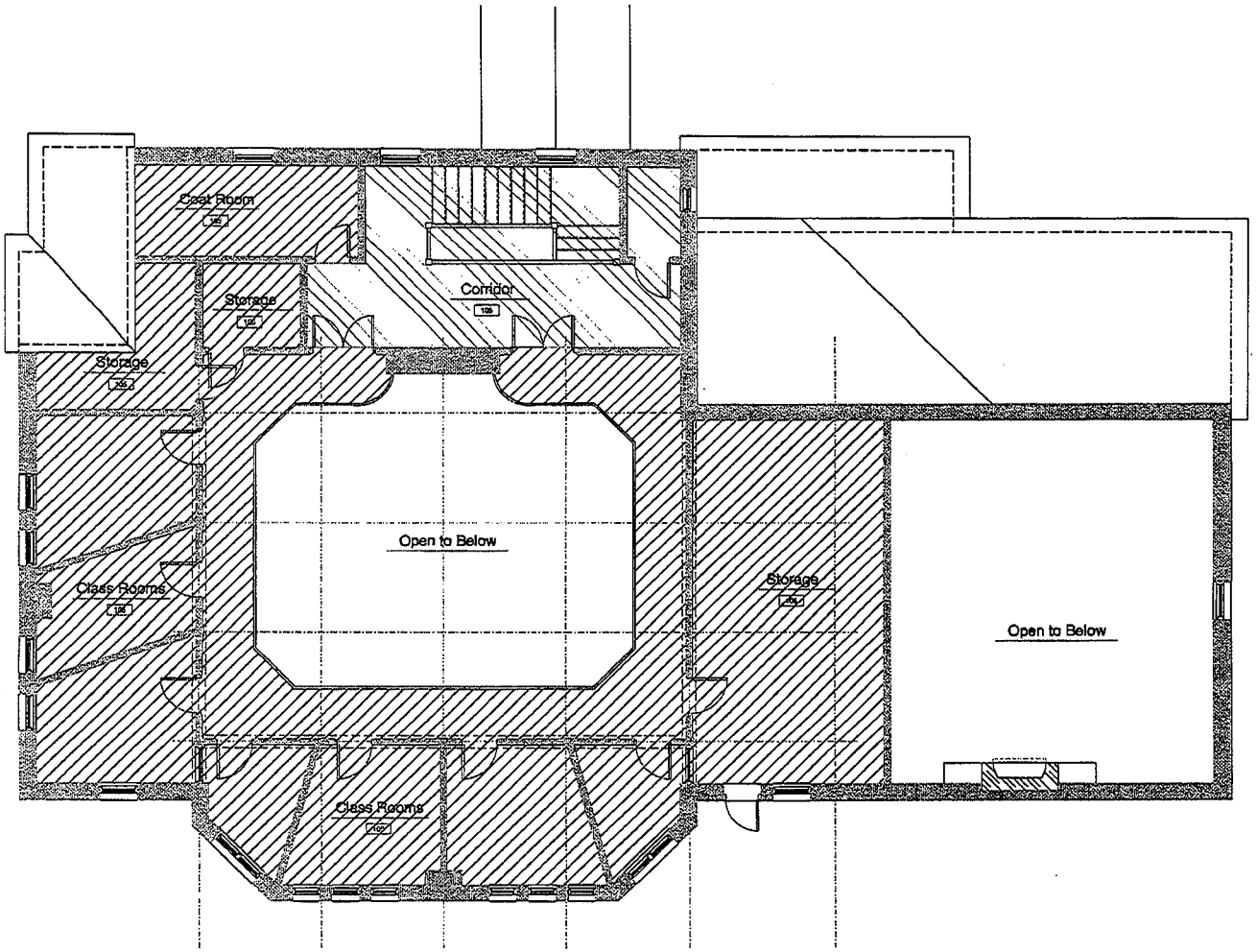
date February 16, 2012
scale 1/4" = 1'-0"
project # 2011-012
drawing title Parish House Ground Floor Plan
A102



GARRISON CONSULTING
41 edgewood ave
portland, maine 04103
telephone 207 450 0760
e-mail matthewwinch@earthlink.net

Williston West
32 Thomas Street LLC
32 Thomas Street
Portland, Maine

date February 16, 2012
scale 1/4" = 1'-0"
project # 2011-018
drawing title Parish House Second Floor Plan
A103



Primary Residence
Approx 1,900 SF

Circulation
Approx. 400 SF

Business Use
Approx 0 SF

GARRISON CONSULTING

41 edgewood ave
portland, maine 04103
telephone 207 450 0780

e-mail matthewmich@earthlink.net

Williston West
32 Thomas Street LLC
32 Thomas Street
Portland, Maine

date February 16, 2012
scale 1/4" = 1'-0"
project # 2011-018
drawing title Parish House Third Floor Plan
A104

EXHIBIT B

32 THOMAS STREET
REHABILITATION SCHEDULE

The following schedule outlines the rehabilitation projects that will be performed at 32 Thomas Street upon approval of Conditional Rezoning of the property, in order to address the immediate needs of the Property to ensure the soundness and integrity of the building envelope and structural elements. Said rehabilitation projects will be designed and constructed to meet the City of Portland's Historic Preservation Ordinance Standards and the Secretary of the Interior's Standards for the Treatment of Historic Properties, and shall be reviewed and approved by the Historic Preservation Board or staff.

Performance of the following rehabilitation projects shall commence within six (6) months of [date of enactment] and shall be completed within twenty-four (24) months of [date of enactment]. Any rehabilitation improvements required by the Conditional Zone Agreement not completed before the issuance of the certificate of occupancy for the office use shall be secured by a performance guarantee in the form of an escrow account, letter of credit, or equivalent surety approved by the Corporation Counsel of the City of Portland, in an amount equal to the estimated cost of completion of such improvements.

1. Replace entire roof system at the sanctuary in accordance with the attached proposal from *The Heritage Co*. Replace all metal flashings, gutters and downspouts to original historic appearance. Original metal trim pieces are at the end of their useful life and should be replicated. Replace membrane at flat roof section.

2. Perform structural repair at all three floor levels of the bell tower including new wood framing and restoration of damaged brick bearing pockets.

3. Perform masonry repairs at the sanctuary as identified on the attached elevation drawings. Said repairs include the damaged area at the southwest corner and other areas of severely damaged or deteriorated masonry.

4. Repair and /or replace approximately 20 bricks at the parish house as identified on the attached elevation drawings.

5. Repair or replace all leaking or missing downspouts on the Parish Hall. The replaced downspouts shall be reviewed by the City's Historic Preservation Manager.

6. Install temporary storm protection window over stained glass window at the parish house that does not currently have storm protection, as identified on the attached elevation drawings.

7. Re-grade the courtyard to create positive drainage away from the building.

8. Reset, repair or repoint granite steps as identified on the attached elevation drawings A-5 and A-6 and reset section of collapsed brick landing at bottom of Carroll Street entrance as identified on the attached elevation drawing A-6.

PRIORITY ONE TREATMENTS

1. REPLACE ENTIRE ROOF SYSTEM AT SANCTUARY INCLUDING METAL FLASHINGS,SHINGLES, GUTTERS, DOWNSPOUTS AND MEMBRANE.
2. PERFORM STRUCTURAL REPAIR AT THE INTERIOR OF ALL THREE FLOOR LEVELS OF THE BELL TOWER INCLUDING NEW WOOD FRAMING AND MASONRY REPAIR.
3. PERFORM MASONRY REPAIRS AT THE SANCTUARY INCLUDING THE REBUILD OF APPOX. 50 SQUARE FEET OF DAMAGED MASONRY AT SOUTHWEST CORNER.
4. REMOVE SEVERELY DAMAGED BRICK AND TOOTH IN RESTORATION BRICK.
5. REPAIR OR REPLACE LEAKING OR MISSING DOWNSPOUTS AT THE PARISH HALL WITH TEMPORARY DOWNSPOUTS AS REVIEWED BY CITY HISTORIC PRESERVATION MANAGER.
6. INSTALL TEMPORARY STORM PROTECTION AT MEMORIAL STAINED GLASS WINDOW AT PARISH HOUSE THAT DOES NOT CURRENTLY HAVE STORM PROTECTION.
7. RE- GRADE THE COURTYARD TO CREATE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
8. RESET, REPAIR OR REPOINT GRANITE STEPS AND RESET SECTION OF COLLAPSED BRICK LANDING AT BOTTOM OF CARROLL ST. ENTRANCE.



1 / A-1 PARISH HOUSE - EAST ELEVATION

1/4" = 1'-0"

0' 5' 10' 25' 100'

ttl-architects, llc
28 DANFORTH STREET
SUITE 213
PORTLAND, MAINE 04101
TEL. 207.761.9662
FAX. 207.761.9696

Exterior Conditions Assessment & Treatment Plan

32 Thomas Street, LLC

32 Thomas Street
Portland, Maine

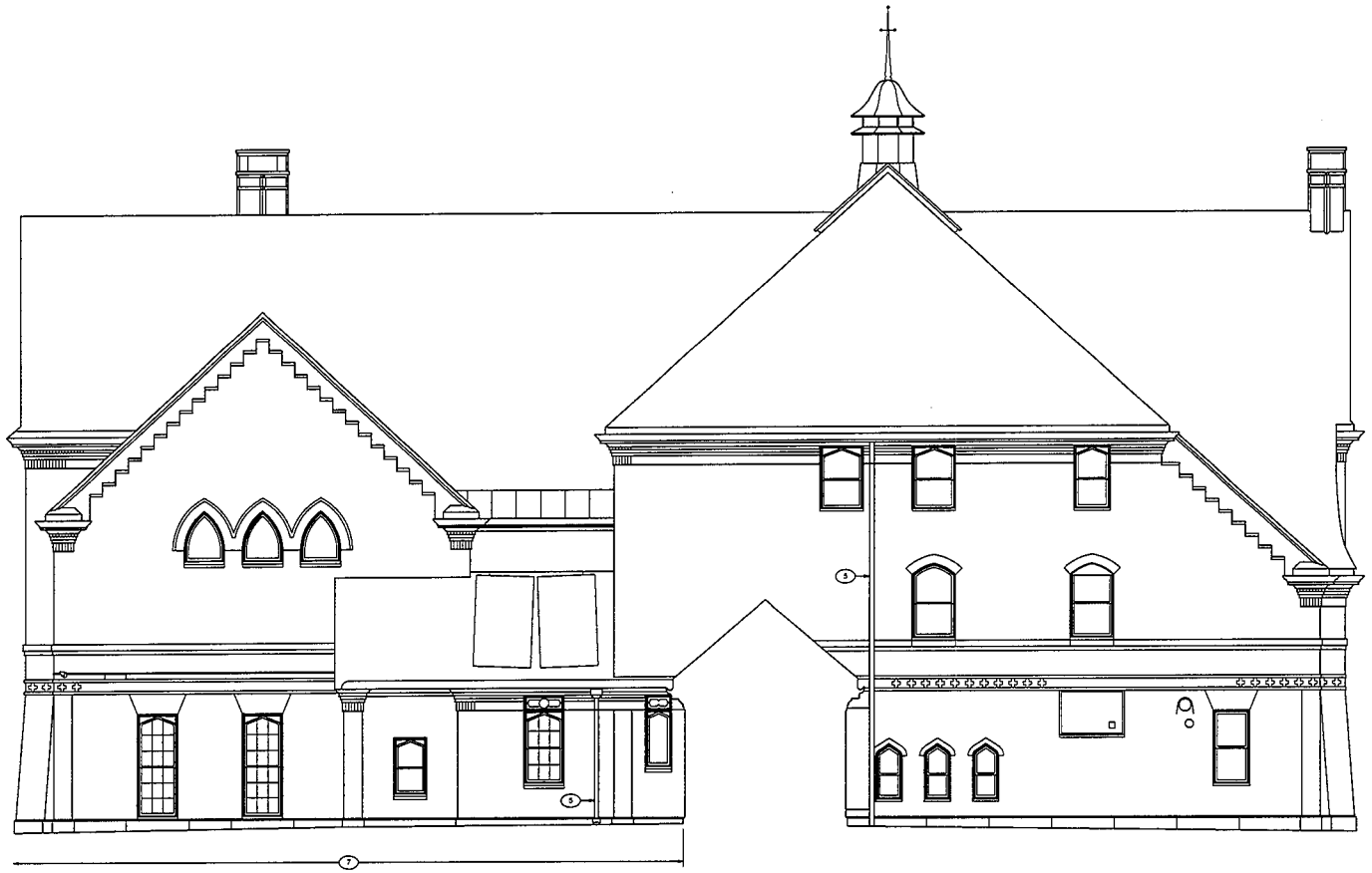
Date: 7 May 2012
Scale: As Shown
Revisions:

Title:
Parish House
East Elevation

Sheet No: A-1

PRIORITY ONE TREATMENTS

1. REPLACE ENTIRE ROOF SYSTEM AT SANCTUARY INCLUDING METAL FLASHINGS,SHINGLES, GUTTERS, DOWNSPOUTS AND MEMBRANE.
2. PERFORM STRUCTURAL REPAIR AT THE INTERIOR OF ALL THREE FLOOR LEVELS OF THE BELL TOWER INCLUDING NEW WOOD FRAMING AND MASONRY REPAIR.
3. PERFORM MASONRY REPAIRS AT THE SANCTUARY INCLUDING THE REBUILD OF APPOX. 50 SQUARE FEET OF DAMAGED MASONRY AT SOUTHWEST CORNER.
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6. INSTALL TEMPORARY STORM PROTECTION AT MEMORIAL STAINED GLASS WINDOW AT PARISH HOUSE THAT DOES NOT CURRENTLY HAVE STORM PROTECTION.
7. RE- GRADE THE COURTYARD TO CREATE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
8. RESET, REPAIR OR REPOINT GRANITE STEPS AND RESET SECTION OF COLLAPSED BRICK LANDING AT BOTTOM OF CARROLL ST. ENTRANCE.



1 / A-2 PARISH HOUSE - NORTH ELEVATION
1/4" = 1'-0"

0' 5' 10' 25' 100'

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FAX. 207.761.9696

Exterior Conditions Assessment & Treatment Plan

32 Thomas Street, LLC

32 Thomas Street
Portland, Maine

Date: 7 May 2012
Scale: As Shown
Revisions:

Title:
Parish House
North Elevation

Sheet No: A-2

PRIORITY ONE TREATMENTS

1. REPLACE ENTIRE ROOF SYSTEM AT SANCTUARY INCLUDING METAL FLASHINGS,SHINGLES, GUTTERS, DOWNSPOUTS AND MEMBRANE.
2. PERFORM STRUCTURAL REPAIR AT THE INTERIOR OF ALL THREE FLOOR LEVELS OF THE BELL TOWER INCLUDING NEW WOOD FRAMING AND MASONRY REPAIR.
3. PERFORM MASONRY REPAIRS AT THE SANCTUARY INCLUDING THE REBUILD OF APPOX. 50 SQUARE FEET OF DAMAGED MASONRY AT SOUTHWEST CORNER.
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6. INSTALL TEMPORARY STORM PROTECTION AT MEMORIAL STAINED GLASS WINDOW AT PARISH HOUSE THAT DOES NOT CURRENTLY HAVE STORM PROTECTION.
7. RE- GRADE THE COURTYARD TO CREATE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
8. RESET, REPAIR OR REPOINT GRANITE STEPS AND RESET SECTION OF COLLAPSED BRICK LANDING AT BOTTOM OF CARROLL ST. ENTRANCE.



1 / A-3 PARISH HOUSE - WEST ELEVATION
1/4" = 1'-0"

0' 5' 10' 25' 100'

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28 DANFORTH STREET
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PORTLAND, MAINE 04101
TEL. 207.761.6662
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Exterior Conditions Assessment & Treatment Plan

32 Thomas Street, LLC

32 Thomas Street
Portland, Maine

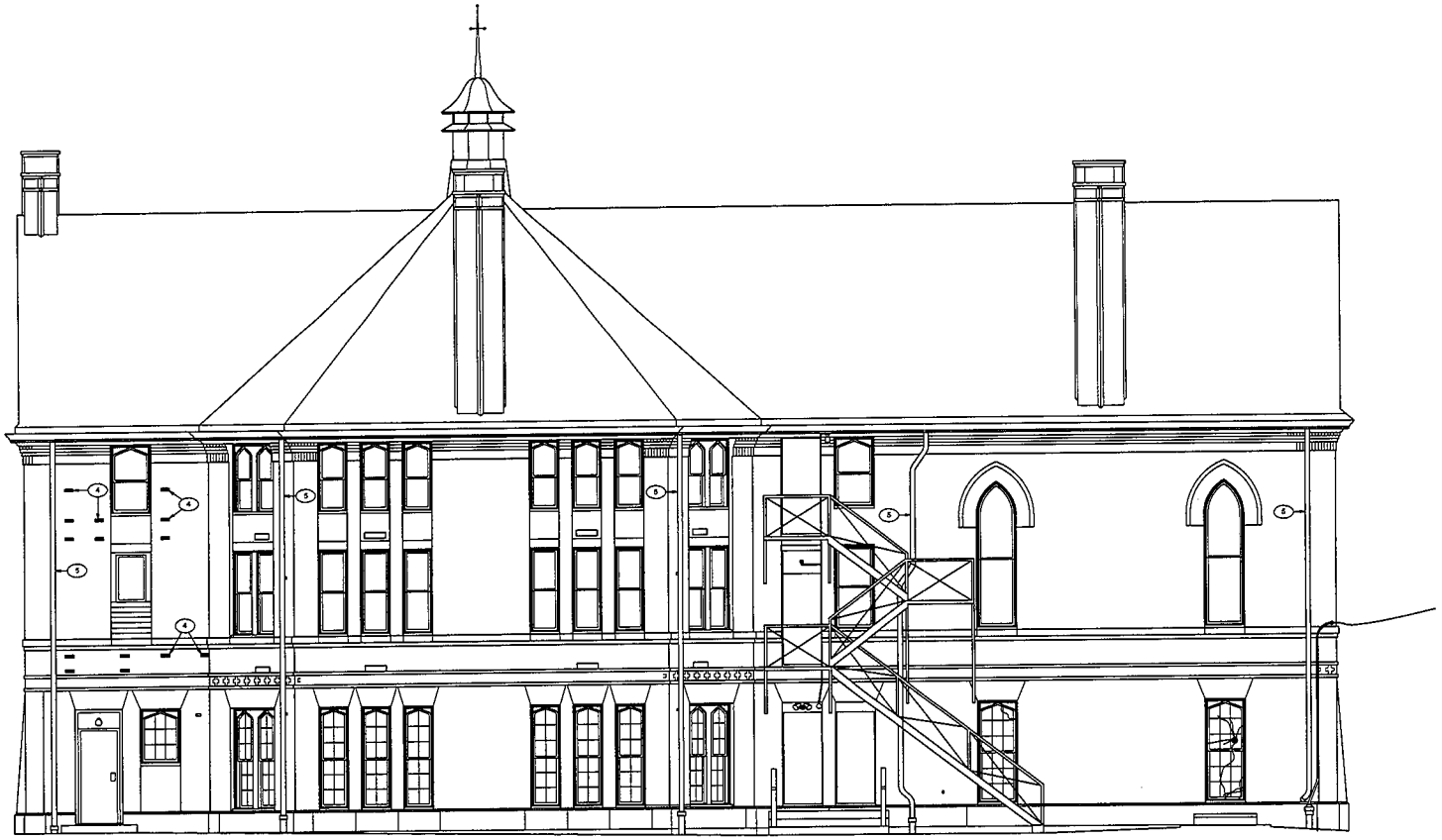
Date: 7 May 2012
Scale: As Shown
Revisions:

Title:
Parish House
West Elevation

Sheet No: A-3

PRIORITY ONE TREATMENTS

1. REPLACE ENTIRE ROOF SYSTEM AT SANCTUARY INCLUDING METAL FLASHINGS,SHINGLES, GUTTERS, DOWNSPOUTS AND MEMBRANE.
2. PERFORM STRUCTURAL REPAIR AT THE INTERIOR OF ALL THREE FLOOR LEVELS OF THE BELL TOWER INCLUDING NEW WOOD FRAMING AND MASONRY REPAIR.
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5. REPAIR OR REPLACE LEAKING OR MISSING DOWNSPOUTS AT THE PARISH HALL WITH TEMPORARY DOWNSPOUTS AS REVIEWED BY CITY HISTORIC PRESERVATION MANAGER.
6. INSTALL TEMPORARY STORM PROTECTION AT MEMORIAL STAINED GLASS WINDOW AT PARISH HOUSE THAT DOES NOT CURRENTLY HAVE STORM PROTECTION.
7. RE- GRADE THE COURTYARD TO CREATE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
8. RESET, REPAIR OR REPOINT GRANITE STEPS AND RESET SECTION OF COLLAPSED BRICK LANDING AT BOTTOM OF CARROLL ST. ENTRANCE.



1 / A-4 PARISH HOUSE - SOUTH ELEVATION

1/4" = 1'-0"

0' 5' 10' 25' 100'

ttl-architects, llc
28 DANFORTH STREET
SUITE 213
PORTLAND, MAINE 04101
TEL. 207.761.9652
FAX. 207.761.2696

Exterior Conditions Assessment & Treatment Plan

32 Thomas Street, LLC

32 Thomas Street
Portland, Maine

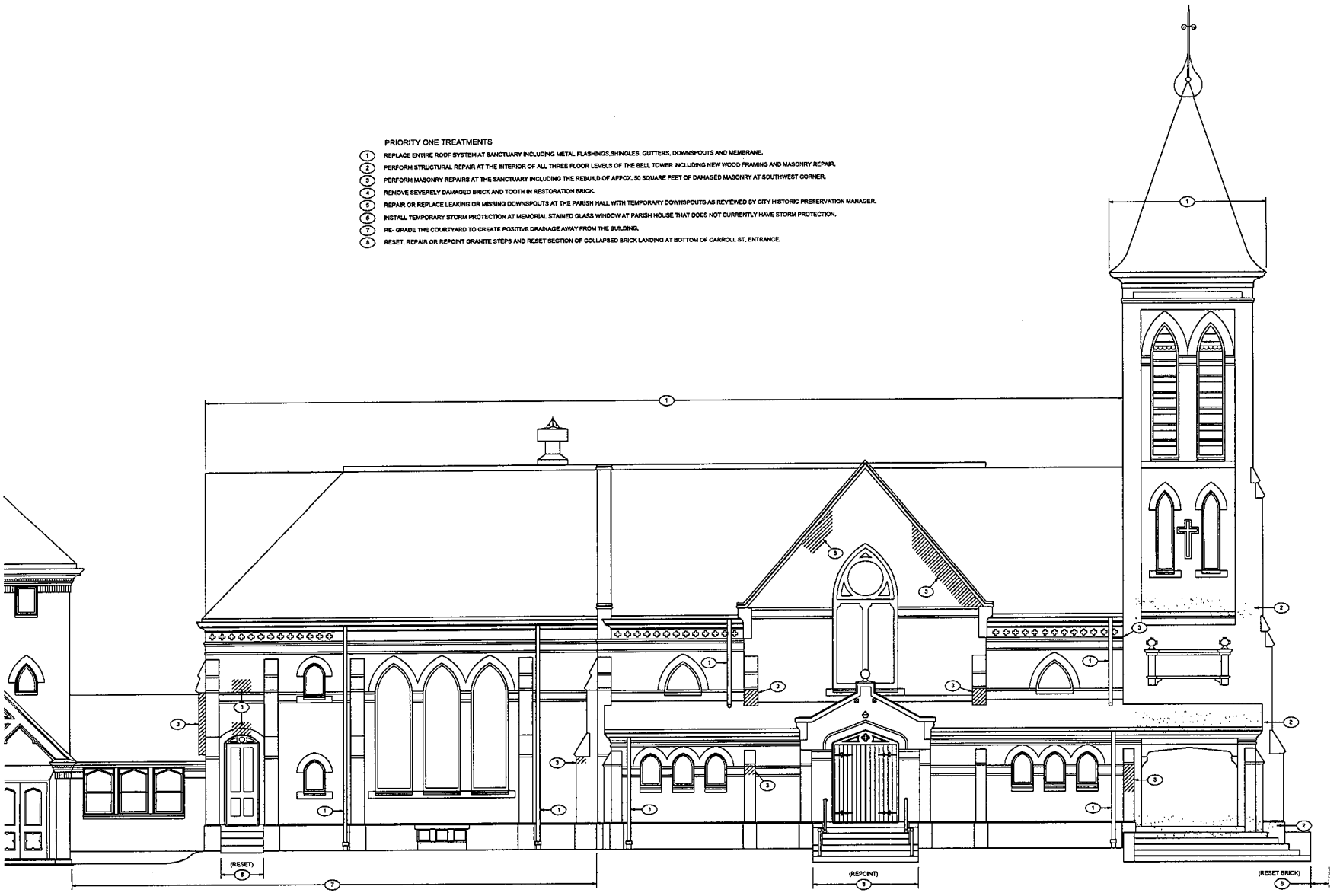
Date: 7 May 2012
Scale: As Shown
Revisions:

Title:
Parish House
South Elevation

Sheet No: A-4

PRIORITY ONE TREATMENTS

1. REPLACE ENTIRE ROOF SYSTEM AT SANCTUARY INCLUDING METAL FLASHINGS,SHINGLES, GUTTERS, DOWNSPOUTS AND MEMBRANE.
2. PERFORM STRUCTURAL REPAIR AT THE INTERIOR OF ALL THREE FLOOR LEVELS OF THE BELL TOWER INCLUDING NEW WOOD FRAMING AND MASONRY REPAIR.
3. PERFORM MASONRY REPAIRS AT THE SANCTUARY INCLUDING THE REBUILD OF APPOX. 50 SQUARE FEET OF DAMAGED MASONRY AT SOUTHWEST CORNER.
4. REMOVE SEVERELY DAMAGED BRICK AND TOOTH IN RESTORATION BRICK.
5. REPAIR OR REPLACE LEAKING OR MISSING DOWNSPOUTS AT THE PARISH HALL WITH TEMPORARY DOWNSPOUTS AS REVIEWED BY CITY HISTORIC PRESERVATION MANAGER.
6. INSTALL TEMPORARY STORM PROTECTION AT MEMORIAL STAINED GLASS WINDOW AT PARISH HOUSE THAT DOES NOT CURRENTLY HAVE STORM PROTECTION.
7. RE- GRADE THE COURTYARD TO CREATE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
8. RESET, REPAIR OR REPOINT GRANITE STEPS AND RESET SECTION OF COLLAPSED BRICK LANDING AT BOTTOM OF CARROLL ST. ENTRANCE.



1 / A-5 SANCTUARY - EAST ELEVATION
1/4" = 1'-0"

0' 5' 10' 25' 100'

ttl-architects, llc
26 DANFORTH STREET
SUITE 213
PORTLAND, MAINE 04101
TEL. 207.761.9662
FAX. 207.761.9696

Exterior Conditions Assessment & Treatment Plan

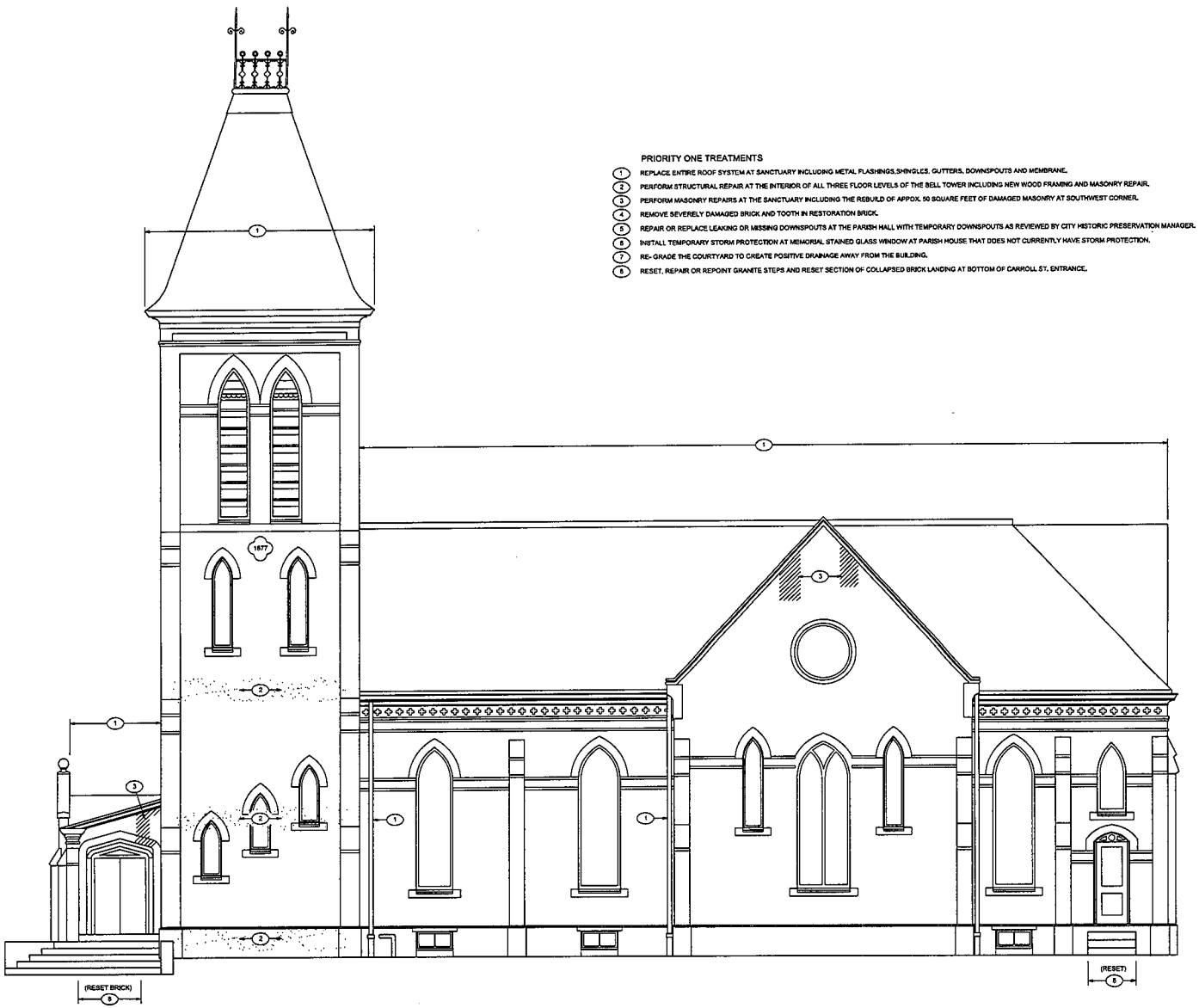
32 Thomas Street, LLC

32 Thomas Street
Portland, Maine

Date: 7 May 2012
Scale: As Shown
Revisions:

Title:
Sanctuary
East Elevation

Sheet No: A-5



PRIORITY ONE TREATMENTS

1. REPLACE ENTIRE ROOF SYSTEM AT SANCTUARY INCLUDING METAL FLASHINGS,SHINGLES, GUTTERS, DOWNSPOUTS AND MEMBRANE.
2. PERFORM STRUCTURAL REPAIR AT THE INTERIOR OF ALL THREE FLOOR LEVELS OF THE BELL TOWER INCLUDING NEW WOOD FRAMING AND MASONRY REPAIR.
3. PERFORM MASONRY REPAIRS AT THE SANCTUARY INCLUDING THE REBUILD OF APPOX. 50 SQUARE FEET OF DAMAGED MASONRY AT SOUTHWEST CORNER.
4. REMOVE SEVERELY DAMAGED BRICK AND TOOTH IN RESTORATION BRICK.
5. REPAIR OR REPLACE LEAKING OR MISSING DOWNSPOUTS AT THE PARISH HALL WITH TEMPORARY DOWNSPOUTS AS REVIEWED BY CITY HISTORIC PRESERVATION MANAGER.
6. INSTALL TEMPORARY STORM PROTECTION AT MEMORIAL STAINED GLASS WINDOW AT PARISH HOUSE THAT DOES NOT CURRENTLY HAVE STORM PROTECTION.
7. RE- GRADE THE COURTYARD TO CREATE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
8. RESET, REPAIR OR REPOINT GRANITE STEPS AND RESET SECTION OF COLLAPSED BRICK LANDING AT BOTTOM OF CARROLL ST. ENTRANCE.

1 / A-6 SANCTUARY - NORTH ELEVATION
1/4" = 1'-0"

0' 5' 10' 25' 100'

ttl-architects, llc
26 DANFORTH STREET
SUITE 213
PORTLAND, MAINE 04101
TEL. 207.761.9662
FAX. 207.791.9696

Exterior Conditions Assessment & Treatment Plan

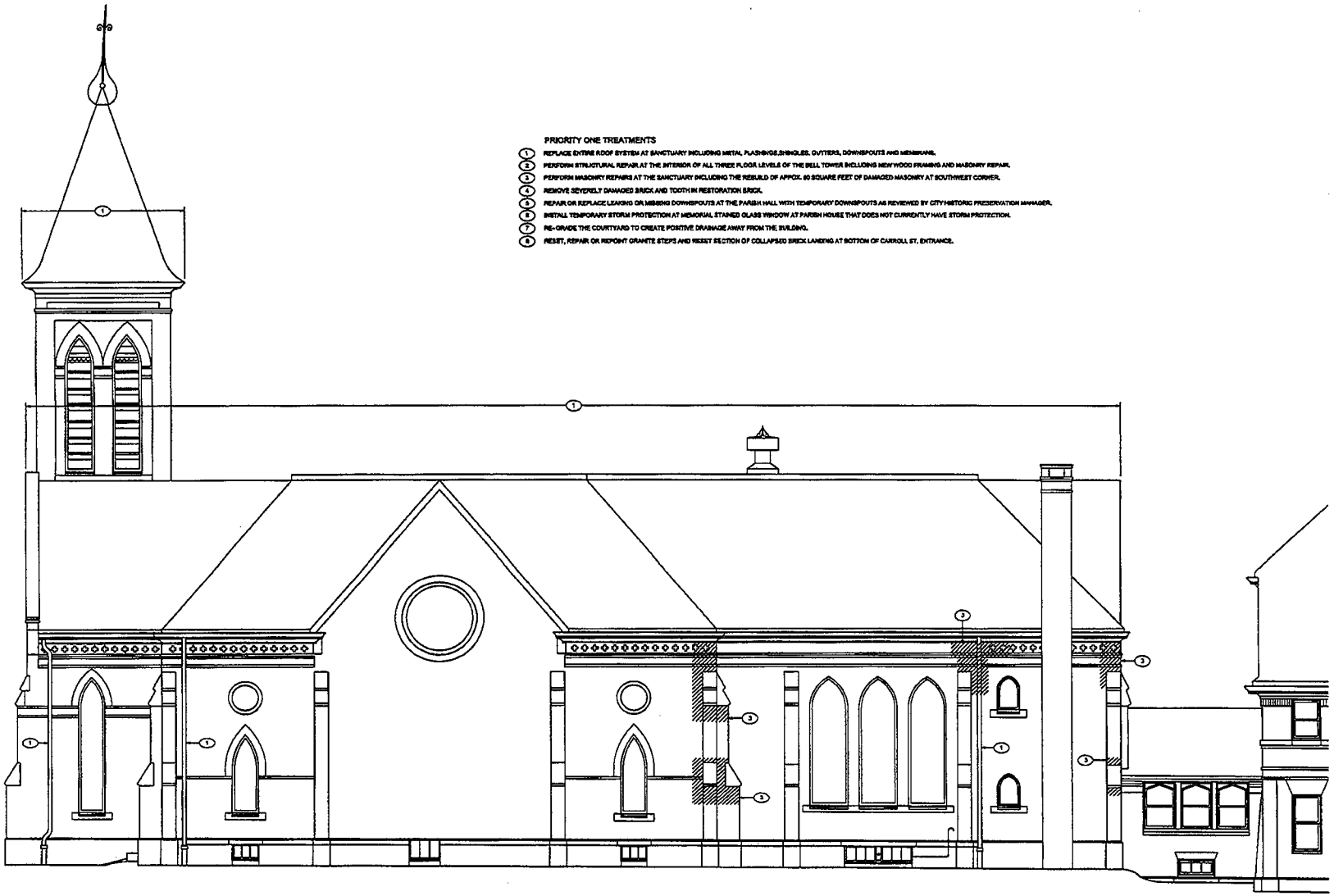
32 Thomas Street, LLC

32 Thomas Street
Portland, Maine

Date: 7 May 2012
Scale: As Shown
Revisions:

Title:
Sanctuary
North Elevation

Sheet No: A-6



PRIORITY ONE TREATMENTS

1. REPLACE ENTIRE ROOF SYSTEM AT SANCTUARY INCLUDING METAL, FLASHINGS,SHINGLES, GUTTERS, DOWNSPOUTS AND MEMBRANE.
2. PERFORM STRUCTURAL REPAIR AT THE INTERIOR OF ALL THREE FLOOR LEVELS OF THE BELL TOWER INCLUDING NEW WOOD FRAMING AND MASONRY REPAIR.
3. PERFORM MASONRY REPAIRS AT THE SANCTUARY INCLUDING THE REBUILD OF APPOX. 80 SQUARE FEET OF DAMAGED MASONRY AT SOUTHWEST CORNER.
4. REMOVE SEVERELY DAMAGED BRICK AND TOOTH IN RESTORATION BRICK.
5. REPAIR OR REPLACE LEAKING OR MISSING DOWNSPOUTS AT THE PARISH HALL WITH TEMPORARY DOWNSPOUTS AS REVIEWED BY CITY HISTORIC PRESERVATION MANAGER.
6. INSTALL TEMPORARY STORM PROTECTION AT MEMORIAL STAINED GLASS WINDOW AT PARISH HOUSE THAT DOES NOT CURRENTLY HAVE STORM PROTECTION.
7. RE-GRADE THE COURTYARD TO CREATE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
8. RESET, REPAIR OR REPOINT GRANITE STEPS AND RESET SECTION OF COLLAPSED BRICK LANDING AT BOTTOM OF CARROLL ST. ENTRANCE.

1 / A-7 SANCTUARY - WEST ELEVATION
1/4" = 1'-0"

0' 5' 10' 25' 100'

tll-architects, llc
28 DANFORTH STREET
SUITE 213
PORTLAND, MAINE 04101
TEL. 207.761.9662
FAX. 207.761.9666

Exterior Conditions Assessment & Treatment Plan

32 Thomas Street, LLC

32 Thomas Street
Portland, Maine

Date: 7 May 2012
Scale: As Shown
Revisions:

Title:
Sanctuary
West Elevation

Sheet No: A-7

PRIORITY ONE TREATMENTS

1. REPLACE ENTIRE ROOF SYSTEM AT SANCTUARY INCLUDING METAL FLASHINGS,SHINGLES, GUTTERS, DOWNSPOUTS AND MEMBRANE.
2. PERFORM STRUCTURAL REPAIR AT THE INTERIOR OF ALL THREE FLOOR LEVELS OF THE BELL TOWER INCLUDING NEW WOOD FRAMING AND MASONRY REPAIR.
3. PERFORM MASONRY REPAIRS AT THE SANCTUARY INCLUDING THE REBUILD OF APPOX. 50 SQUARE FEET OF DAMAGED MASONRY AT SOUTHWEST CORNER.
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5. REPAIR OR REPLACE LEAKING OR MISSING DOWNSPOUTS AT THE PARISH HALL WITH TEMPORARY DOWNSPOUTS AS REVIEWED BY CITY HISTORIC PRESERVATION MANAGER.
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7. RE- GRADE THE COURTYARD TO CREATE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
8. RESET, REPAIR OR REPOINT GRANITE STEPS AND RESET SECTION OF COLLAPSED BRICK LANDING AT BOTTOM OF CARROLL ST. ENTRANCE.



1 / A-8 SANCTUARY - SOUTH ELEVATION

1/4" = 1'-0"

0' 5' 10' 25' 100'

ttl-architects, llc
28 DANFORTH STREET
SUITE 213
PORTLAND, MAINE 04101
TEL. 207.761.9662
FAX. 207.761.9696

Exterior Conditions Assessment & Treatment Plan

32 Thomas Street, LLC

32 Thomas Street
Portland, Maine

Date: 7 May 2012
Scale: As Shown
Revisions:

Title:
Sanctuary
South Elevation

Sheet No: A-8

THE HERITAGE CO.
P.O. Box 71
E. Waterboro, ME. 04030
247-5372 Fax 247-4256

Architectural Copper Work and Cornicing
Historically Correct Restorations
Slate and Clay Tile Roofing

April 27, 2012

Leddy Houser Associates
Attn: Paul Leddy
429 Preble Street
South Portland, Maine 04106

Dear Mr. Leddy:

Please accept the following updated estimate for the complete, historically accurate slate and copper roof restoration work on the upper main roof of the Williston Church on Thomas Street in Portland, Maine.

Scaffolding---$22,526.00
-Erect scaffolding in accordance to OSHA standards up to the gutter line around the perimeter of the main church roof. Install the necessary safety features to protect pedestrians and the property.

Demolition---$40,008.00
-Remove and dispose of the existing asphalt shingle roof materials and flashing components from the pitched roofs. Re-nail all roof decking using 8d nails. Install an ice and water shield membrane to the lower three feet of the main roof, in all valleys, and around all other roof protrusions such as the steeple sidewalls, chimney and the vent pipe. Install a #30 roofing paper to all other exposed roof decks.

Main Roof Gutter---$25,854.00
-Install a custom fabricated 16-oz. copper gutter system exactly matching the size and configuration of the original gutter at all main roof fascia. The gutter shall have a 1/4" x 1" copper bar installed into its face with 1/8" x 1" copper bar hangers bolted to the face bar with brass bolts every 18" for strength.

-If the existing gutters are eliminated and a cornice flashing is to be installed similar to your drawing, the cost will be $20,016.00 instead of the $25,854.00 for the gutter.

Conductor Pipes for Main Roof Gutters---$9,600.00
-Install custom fit 16-oz. copper conductor pipes at the original pipe locations to lead the water from the main roof gutters to the ground. If 3" round corrugated galvanized steel conductor pipes are to be used instead of copper please deduct **$3,735.00** from the total. If galvanized steel pipes are used, they should be primed inside and outside and two coats of paint applied to the outside.

THE HERITAGE CO.
P.O. Box 71
E. Waterboro, ME. 04030
247-5372 Fax 247-4256

Architectural Copper Work and Cornicing
Historically Correct Restorations
Slate and Clay Tile Roofing

Valley Flashings---$6,667.00
-Install continuous 16-oz. copper flashings in all main roof valleys fabricated from 18" stock. If 24" stock is to be used, please add $1,030.00.

Slating---$108,110.00
-Install Premium ¼" thick North Country Black Slate to the roof using 1 ½" copper slating nails. The valleys will be slated using an open profile. If a mixed Vermont Grey/Green and Vermont Semi Weathering Green Slate will be used instead of the North Country Black Slate, please deduct $7,000.00.

Cornice Flashings for Raised Parapets---$12,561.00
-3 of the gables have raised parapet walls above the roof deck. Fabricate and install 16-oz. copper step flashings interwoven with the installation of the slate along each of the parapet walls. Install custom fabricated 16-oz. copper flashings to the tops of the parapets. The new copper parapet caps will exactly match the size and configuration of the original caps.

Cornice Flashings for the Gables that are not Raised---$3,990.00
-2 of the gables have metal cornice flashings running up the gable rakes. Install custom fabricated 16-oz. copper flashings to gable rakes. The new copper cornice flashings will exactly match the size and configuration of the original flashings.

Chimney Flashings---$1,391.00
-Install16-oz. copper base flashings interwoven with the installation of the slate around the west elevation chimney. Install 16-oz. copper counter flashings symmetrically placed into 1" deep reglets symmetrically cut into mortar joints around three sides of the chimney. Repoint the reglets with a compatible mortar.

Plumbing Vent Pipe Flashing---$490.00
-Install a16-oz. copper base flashing around the plumbing vent pipe interwoven with the installation of the slate. Install a high hat counter flashing over the pipe.

Steeple Base Flashings---$3,218.00
-Install16-oz. copper base flashings interwoven with the installation of the slate around the base of the steeple. Install 16-oz. copper counter flashings symmetrically placed into 1" deep reglets symmetrically cut into mortar joints above the step flashings. Repoint the reglets with a compatible mortar.

"Four Generations Of Experience"

THE HERITAGE CO.
P.O. Box 71
E. Waterboro, ME. 04030
247-5372 Fax 247-4256

Architectural Copper Work and Cornicing
Historically Correct Restorations
Slate and Clay Tile Roofing

Hip and Ridge Flashings---$4,650.00
-Install continuous copper flashings mechanically fastened with brass screws and washers on all hip and ridge lines.

Cornice Flashings at Perimeter of EPDM Roof---$2,343.00
-Custom fabrication and installation of a copper cornice flashing around the perimeter of the EPDM roof at the top of the building.

Front Vestibule Roof, Gutter and Conductor Pipes---$21,191.00
-Erect scaffolding in accordance to OSHA standards up to the gutter line at the front vestibule. Install the necessary safety features to protect pedestrians and the property---$2,659.00.

-Remove and dispose of the existing roof materials and flashing components from the vestibule roof. Re-nail all roof decking using 8d nails. Install an ice and water shield membrane to the roof deck. Install a rosin sized paper over the membrane---$2,632.00.

-Install a custom fabricated 16-oz. copper gutter system exactly matching the size and configuration of the original gutter across the front fascia of the front vestibule. The gutter shall have a 1/4" x 1" copper bar installed into its face with 1/8" x 1" copper bar hangers bolted to the face bar with brass bolts every 18" for strength---$4,650.00.

-Install custom fit 16-oz. copper conductor pipes at the original pipe locations to lead the water from the gutters to the ground---$800.00. If 3" round corrugated galvanized steel conductor pipes are to be used instead of copper please deduct $312.00 from the total.

-Install a symmetrically placed, double locked standing seam 16-oz. copper roof to the vestibule roof. Install all related flashings---$10,450.00.

If you have any questions, please feel free to call.

Sincerely,

Victor A. Wright

"Four Generations Of Experience"

TECTA AMERICA

April 24, 2012

Leddy/Hauser Assoc.
72 Ocean Street
Suite 104
South Portland, Me. 04106

Attn:

Project Name: 32 Thomas Street (approx. 1,700 sq. ft.)
Location: Portland, Me.

- Remove and dispose of the existing epdm and fiberboard.
- Supply and install 1/2" HD polyiso insulation.
- Supply and install a fully adhered .060 E.P.D.M. of system.
- Flash all vertical transitions and penetrations.
- Supply a 15 year labor 20 year material warranty.
- This estimate/proposal will become a contract once executed by both parties.

TOTAL LABOR MATERIALS: $16,800.00
(Sales tax included if applicable)

Customer Approval: _____ Date: _____

Tecta America: Scott Weeks Date: 4-24-12

Alternates: Supply and install a Bilco S-20 roof hatch at the existing penetration. **ADD $1,475.00**

For white .060 PVC membrane **ADD $2,100.00**

ATTACHMENT 1

PORTLAND CITY COUNCIL ORDER 214-11/12

JUNE 18, 2012

A TRUE COPY
ATTEST: Katherine L. Jones City Clerk
Katherine L. Jones, City Clerk
Portland, Maine
DATE 4/28/2012

Order 214-11/12
Given first reading on 6/4/12
Passage as amended: 6-3 (Coyne, Anton, Leeman) 6-18-12

MICHAEL F. BRENNAN (MAYOR)
KEVIN J. DONOGHUE (1)
DAVID A. MARSHALL (2)
EDWARD J. SUSLOVIC (3)
CHERYL A. LEEMAN (4)

CITY OF PORTLAND
IN THE CITY COUNCIL

JOHN R. COYNE (5)
JOHN M. ANTON (A/L)
JILL C. DUSON (A/L)
NICHOLAS M. MAVODONES (A/L)

AMENDMENT TO CITY CODE
SEC. 14-49 (ZONING TEXT AND MAP AMENDMENT)
RE: Conditional Zoning Agreement
Williston-West Church

ORDERED, that the zoning map and text of the City of Portland, dated December 2000 as amended and on file in the Department of Planning & Development, and incorporated by reference into the Zoning Ordinance by Sec. 14-49 of the Portland City Code, is hereby amended to reflect a conditional rezoning as detailed below.

CONDITIONAL ZONE AGREEMENT
RE:
WILLISTON-WEST CHURCH

AGREEMENT made this 13th day of July, 2012 by 32 Thomas Street, LLC, 477 Congress St., Suite 601, Portland, Maine ("Developer"), and its successors and assigns.

W I T N E S S E T H

WHEREAS, the Developer owns real property located at 32 Thomas Street, consisting of the parcel shown on the City's Tax Map 62, Block E, Lot 5, being more particularly described in a deed recorded in Cumberland County Registry of Deeds in Book 29217, Page 171 (collectively the "Property"); and

WHEREAS, the existing building complex located on the Property was formerly used as the Williston-West Church; and

WHEREAS, the Property, located within the West End Historic District, is currently zoned R-4 Residential; and

WHEREAS, the properties on the opposite sides of Thomas and Carroll Streets, directly across from the Property, are zoned R-6 Residential; and

WHEREAS, the building complex located on the Property is comprised of two principal portions, the sanctuary and the parish house; and

WHEREAS, the building complex is listed in the National Register of Historic Places, the sanctuary is a designated local landmark as defined by Article IX of the

Portland City Code and the parish house is a contributing structure within the West End Historic District under Article IX; and

WHEREAS, the sanctuary and the parish hall are important, unique, large-scale, non-residential historic structures that were designed by noted architects Francis Fassett and John Calvin Stevens respectively; and

WHEREAS, the building complex significantly contributes to the architectural fabric of the neighborhood and distinctive sense of place that defines Portland and therefore requires special consideration with regard to its rehabilitation and preservation; and

WHEREAS, the standards of review for alterations of historic structures set forth in Portland City Land Use Code (the "Code") §14-650 include the following: (a) Every reasonable effort shall be made to provide a compatible use for a property which requires minimal alteration to the character-defining features of the structure, object or site and its environment or to use a property for its originally intended purpose; and (b) The distinguishing original qualities or character of a structure, object or site and its environment shall not be destroyed. The removal or alteration of any historic material or distinctive architectural features should be avoided when possible.

WHEREAS, the building complex located on the Property is falling into a state of disrepair; and

WHEREAS, historically appropriate and neighborhood compatible adaptive re-use of historic religious structures is often challenging, and reasonable use flexibility may enable economically viable rehabilitation and productive use of such buildings for their long term preservation; and

WHEREAS, the City's comprehensive plan includes the following stated goals: to preserve Portland's architectural and historic heritage; to promote an economic climate which increases job opportunities and overall economic well-being; and to preserve and enhance the quality and vitality of neighborhoods within and adjacent to the Downtown; and

WHEREAS, offices in residential zones, particularly in the R-4 zone, have been limited and any allowance of an office use in the R-4 zone should only be considered for large, unique, and historically significant structures which have not previously been in residential use, and must be carefully considered and controlled to achieve an appropriate balance between policies supporting neighborhood preservation and policies supporting economic development and preservation of the City's architectural and historic heritage; and

WHEREAS, the Developer proposes and intends to rehabilitate the parish house to provide for a family residence on the second and third floors, and a caretaker residence and office space on the first floor, as illustrated in Exhibit A attached hereto; and

WHEREAS, the Developer proposes and intends to rehabilitate, preserve and maintain the sanctuary and to use the building as a community hall for limited community uses; and

WHEREAS, the Developer intends to maintain the historic character of the structures and Property and will commit to a rehabilitation schedule of improvements to the building complex to address immediate needs to ensure the soundness and integrity of the building envelope and structural elements, and intends to perform additional improvements to the building complex to prolong its useful life and preserve the historic character, all with the goal of extending the useful life of the building complex for a time period approaching fifty (50) years or longer; and

WHEREAS, the existing zoning is R-4 which has dimensional requirements that the existing building complex does not meet, but is lawfully nonconforming; and

WHEREAS, the proposed use of the building complex by the owner/Developer includes an office component that is a necessary economic value and program element for the feasibility of the productive use of the building complex and the associated rehabilitation investments; and

WHEREAS, the Developer has requested a rezoning of the Property in order to permit the proposed development of the Property which will facilitate funding the comprehensive rehabilitation and long-term maintenance of the historic structures; and

WHEREAS, the proposed uses of the Property are consistent with the existing and permitted uses in the neighborhood, which include a mix of residential, commercial and institutional uses; and

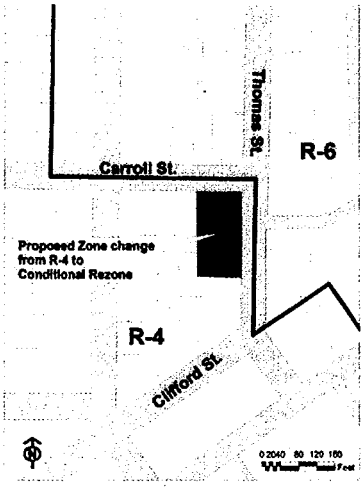
WHEREAS, the Planning Board, after notice and hearing and due deliberation thereon, recommended the rezoning of the Property as aforesaid, subject, however, to certain conditions contained in this AGREEMENT; and

WHEREAS, the Portland City Council, pursuant to 30-A M.R.S.A. § 4352(8) and §§ 14-60 to 14-62 of the Code, after notice, hearing and due deliberation thereon, has determined that because of the unusual nature and unique location of the proposed development, and its minimal impact on and compatibility with the surrounding community, it is necessary and appropriate to recommend the rezoning of the Property as aforesaid, with the following conditions and restrictions set forth in this AGREEMENT; and

WHEREAS, the Portland City Council has on June 18, 2012 approved this Agreement in its entirety, by City Council Order No. 214-11/12, a true copy of which is attached hereto as Attachment 1 (the "Order");

NOW, THEREFORE, in consideration of the rezoning, the Developer covenants and agrees as follows:

1. Pursuant to the Order, the City shall amend the Zoning Map of the City of Portland, dated September, 2000 (as amended from time to time and on file in the Department of Planning and Urban Development, and incorporated by reference into the Zoning Ordinance by § 14-49 of the Code) by adopting the map change amendment shown below to zone the property conditional R-4, subject to the conditions contained below.



Conditional Rezoning from R-4
32 Thomas Street
(Williston West Church building complex)

If this Agreement is not recorded within sixty (60) days after the effective date of the City Council's approval of the Order, then the conditional rezoning shall become null and void and the zoning of the Property shall revert to the pre-existing R-4 zone.

2. Permitted uses:

a. All uses allowed in the R-4 zone.

b. Professional offices, including computer software programming and marketing, and excluding personal services, retail services and veterinarians, subject to the following limitations:

(1) Professional offices shall be located on the first floor of the parish house and shall occupy no more than 2,800 square feet of floor area.
(2) The total number of individuals working in the professional offices shall not exceed fourteen (14) non-resident employees regularly scheduled to occupy the premises at any one time.

(3) The business utilizing the office space shall be a single tenant office user owned by or affiliated with the owner of the building complex.
(4) The office use shall not generate frequent daily visitation by clients, customers, or the general public.
(5) The owner or operator of the business shall secure and provide to its employees one (1) off street parking space for each employee who commutes to the office by his or her automobile.

3. Use of the sanctuary as a community hall shall be reviewed as a conditional use by the Planning Board, which may place limitations on the use of the sanctuary as a community hall, in addition to the requirements for community halls set forth in section 14-103(b)(2)(e). Said limitations may include, but are not limited to the following:

a. Occupancy load;
b. Hours and days of operation;
c. Record keeping and reporting;
d. Number of organizations that may be entitled to regular use of the community hall at any one time;
e. Noise level as the property line; and
f. Service of alcohol.

4. The underlying dimensional requirements of the R-4 zone shall apply and are modified as follows:

a. Minimum Lot Size for place of assembly and professional office uses combined: 17,500 square feet.

b. Minimum Yard Dimensions:

1. Front yard: 3 feet.
2. Rear Yard: 3 feet.
3. Side Yard: 4 feet
4. Side Yard on Side Streets: 8 feet.

c. Maximum Lot Coverage: 90%.

d. Maximum Structure Height (Sanctuary): 37 feet.

e. Maximum Structure Height (Parish House): 46 feet.

f. Maximum Structure Height (Bell Tower): 70 feet.

g. Maximum Floor Area for Places of Assembly: 6,000 sq. ft.

h. Residential dwellings within the existing structures shall be governed by the provisions of Section 14-103(a)(2) of the underlying R-4 zone. Density calculations for residential use shall be based on the lot size of the parcel without land area deductions for other non-residential uses on the site.

5. Any increase in the volume or footprint of either the parish house or the sanctuary shall be prohibited.

6. Subject to receiving all necessary regulatory approvals, the Developer shall rehabilitate the Property in accordance with the Rehabilitation Schedule and related elevation drawings A-1 through A-8, attached hereto as Exhibit B, in keeping with the standards of Article IX, Historic Preservation, of the Portland City Code and as shall be reviewed and approved by the Historic Preservation Board or staff under the terms of this Article. Rehabilitation shall commence within six (6) months of [date of enactment] and shall be completed within twenty-four (24) months of [date of enactment]. Any rehabilitation improvements required by this AGREEMENT not completed before the issuance of the certificate of occupancy for the office use shall be secured by a performance guarantee in the form of an escrow account, letter of credit, or equivalent surety approved by the Corporation Counsel of the City of Portland, in an amount equal to the estimated cost of completion of such improvements. Such performance guarantee shall be reduced by the City upon completion of improvement phases, but shall not be reduced to less than the estimated cost of any incomplete required improvements. In the event that the owner/developer fails to execute the required improvements by the time specified herein, unless granted an extension in writing from the Planning Authority of the time to complete for good cause and not to exceed an additional twelve (12) months, then the City of Portland or its designee shall have the right to utilize the proceeds of the performance guarantee to hire a competent contractor to complete such improvements. In such event, the Planning Authority shall have the right to review and approve the work scope consistency with the required improvements of Exhibit B, the specifications and methods of such work items, and contractor qualifications.

7. If any required approval, including the City Council's approval of this AGREEMENT, has been appealed or becomes the subject of litigation, then the required performance time frames contained in this AGREEMENT shall be measured from the final disposition of any such appeal or litigation. Failure, however, to commence the rehabilitation improvements or post the performance guarantee within the timeframes stipulated in this paragraph and/or paragraph 13 shall result in the reversion of the subject property to the underlying R-4 zone and this AGREEMENT shall be null and void.

8. The provisions of this AGREEMENT are intended to replace and/or supersede the associated provisions of the underlying R-4 zone. As stated above, to the extent not otherwise altered herein, the zoning requirements for the R-4 zone shall otherwise apply to the Property.

9. For a period of five (5) years from [date of enactment], Developer shall submit an annual report to the Planning Authority which shall include the number of employees working at the premises, the location and number of secured off street parking spaces, and other items pertaining to compliance with provisions of this AGREEMENT as required by the Planning Authority. Thereafter, to the extent the Planning Authority requires additional information/report(s) the Developer shall provide the Authority with any such additional information/report(s).

10. The Developer shall replace and/or repair the sidewalk and all other public property surrounding the entire Property if said sidewalk or other public property is damaged as a result of construction on the Property including, but not limited to, construction of the residential and office uses described in this AGREEMENT.

11. Under no circumstances shall the Developer be permitted to convert any residential property in the R-4 zone to an institutional use.

12~~10~~. In the event of a breach by the Developer or its successors or assigns of the provisions contained herein (whether the Zoning Administrator, the Zoning Board of Appeals or a Court determines such breach), the Planning Board, after notice and hearing, may review the circumstances of the breach and recommend to the City Council that this AGREEMENT be amended or be rescinded and determine that such rescission should result in the termination of this AGREEMENT and a reversion of the Property to the R-4 zone requirements in place before the execution of this AGREEMENT.

13~~11~~. This AGREEMENT may also be enforced pursuant to the land use enforcement provisions of state law including, but not limited to, 30-A MRSA § 4452 and the Portland City Code.

14~~12~~. The above stated restrictions, provisions, and conditions are an essential part of the rezoning, shall run with the Property, shall bind and benefit the Developer, any entity affiliated with the Developer that takes title to the Property, its successors and assigns, and any party in possession or occupancy of said Property or any part thereof, and shall inure to the benefit of and be enforceable by the City of Portland, by and through its duly authorized representatives. The Developer shall file a counterpart original of this Agreement in the Cumberland County Registry of Deeds.

15~~13~~. The Planning Authority shall be notified of any potential and/or pending sale of the Property (which most likely will be evidenced by a Purchase & Sales Agreement or its equivalent), and prior to closing the sale of the Property shall meet with the buyer and verify that he/she/it has read, understood and agrees to be bound by the terms, conditions, limitations and provisions of this AGREEMENT, and said buyer shall so state in a signed affidavit to be kept on file with the Planning Authority.

16~~14~~. If any of the restrictions, provisions, conditions, or portions thereof set forth herein is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed as a separate, distinct, and independent

provision and such determination shall not affect the validity of the remaining portions hereof.

17~~15~~. Except as expressly modified herein, the development shall be governed by and comply with the provisions of the Portland City Code, including but not limited to, the maintenance requirements for historic structures set forth in section 14-690 of the Code, and any applicable amendments thereto or replacement thereof.

WITNESS: _____

32 THOMAS STREET, LLC

_____

BY:

STATE OF MAINE
CUMBERLAND, ss. _____, 2012

Personally appeared before me the above-named _____, in his/her capacity as _____ of 32 THOMAS STREET, LLC, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity and the free act and deed of said corporation.

Before me,

_____

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

Jeff Levine, AICP, Director
Ann Machado, Zoning Administrator

September 9, 2015

Prof. Frank Monsour
32 Thomas Street LLC
32 Thomas Street
Portland ME 04101

Re: 26-32 Thomas Street

Dear Prof. Monsour:

On September 3, 2015, the Zoning Board of Appeals voted 4-0 (Moppin and Larssen absent) to grant the Conditional Use Appeal to add five dwelling units to the existing structure that was previously used as the Parish House for the Church. This approval is valid for two years. I am enclosing a copy of the Board's decision. You will also find an invoice for the fees that are still owed for the processing fee, legal ad and the notices for the appeal. Please submit your payment on receipt of this invoice.

Now that the conditional use appeal has been approved, you will need to apply for a permit to add the five dwelling units to the existing building. This permit can be found on the City website http://www.portlandmaine.gov/documentcenter/view/2301. You have two years from the date of the meeting, September 3, 2015, referenced under section 14-474(f) to obtain the permit and start work, or your Zoning Board approval will expire.

Your permit will be reviewed concurrently with the current Level III Site Plan (#2015-131). It cannot be issued until the Planning Board approves the Level III Site Plan.

Appeals from decisions of the Board may be filed in Superior Court in accordance with Rule 80B of the Maine Rules of Civil Procedure.

Should you have any questions, please contact me at (207) 874-8709.

Sincerely,

Ann B. Machado
Zoning Administrator

CC: file

From: David Margolis-Pineo
To: Barbara Barhydt; Jean Fraser
CC: DEVELOPMENT REVIEW GROUP
Date: 12/2/2015 3:08 PM
Subject: Final Review Comments for 28 Thomas St

September 3, 2015
October 5, 2015
December 2, 2015

Memo To: Jean Fraser
Barbara Barhydt
From: David Margolis-Pineo
RE: 26 Thomas St – Williston West Parish House – Subdivision & Site Plan-2015-131

The Department of Public Services has the following review comments for the above mentioned project.

1. There are overhead utilities extending to the site from both Thomas and Carroll Streets. Subdivision code requires all overhead utilities to be placed underground from the street right of way.
Status: Applicant needs to indicate on plans that all existing overhead utilities will be removed. This issue has yet to be resolved.

2. There is an open area in the brick sidewalk where a tree was removed which needs repair. Please coordinate with Jeff Tarling (874-8820), City arborist, to have the tree replaced or make arrangements to repair by replacing the brick.
Status: Issue not resolved. It is my understanding that the City Arborist would like a tree replanted at this location.

3. The applicant is request to install an ADA warning panel in the crosswalk ramp adjacent to the applicant's property on Thomas St.
Status: The applicant has indicated that warning panels will be installed. Thank you

4. Please verify if roof drains are connected to the City's sewer system. If so, please redirect the drainage out of the sewer to the ground.
Status: The applicant has indicated that all roof drains will be redirected to the ground. Thank you

5. Survey Comments:
- Plat not stamped by a professional Land Surveyor.
- Show the State Plane Coordinates at the four corners.
- Need Grid/State Plane and City control Points used for coordinates (Survey Note #1).
- Please submit Boundary Survey conducted by Northeast Civil Solutions, Inc, Dated Dec 13, 2011.

This department has no further comments at this time.

Att. 4

From: Jeff Tarling
To: Jean Fraser
CC: David Margolis-Pineo
Date: 12/2/2015 4:39 PM
Subject: 28 Thomas Street

Jean -

The proposed plan is acceptable as shown with the condition that a new tree be installed in the empty tree well
on Carroll Street.

Thanks

Jeff Tarling

From: Keith Gautreau
To: Jean Fraser
Date: 12/3/2015 8:54 AM
Subject: Re: PB Report this week- final comments needed WW Parish House

Hi Jean,

I would still like to see the capacity to serve letter from the Portland Water District. I know they are stating there are six inch mains in the area but I have concern of the age of the mains and what the actual capacity is? I'm good with the location and proximity of the hydrants, would just like to know if there's enough water for domestic and fire protection for this project.

As I said before, I'm good with the emergency access to the structure and what is proposed.

Let me know if there is anything else you need from me.

Keith

Keith Gautreau, Assistant Chief
Fire Prevention/Community Outreach
Portland Fire Department
380 Congress Street
Portland, ME 04101
(207)874-8400
kng@portlandmaine.gov

From: Tom Errico <thomas.errico@tylin.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>, "JeremiahBartlett" <JBartlett@portlandmaine.gov>
Date: 12/4/2015 9:55 AM
Subject: Williston West - Final Traffic Comments

Jean - I have reviewed the final site plan and I find conditions to be acceptable with the following specific comments.

* I support a waiver from the City's Technical Standards for the parking lot aisle width given site constraints. The applicant has provided vehicle turning template information that illustrates vehicles will be able to access and egress parking spaces. Backing maneuvers onto Thomas Street will likely be required, but given low traffic volume and speed, I find this condition to be acceptable.

* In addition to providing detectible warning panels on the sidewalk ramps, the applicant should replace the brick material to meet City standards.

* The site plan notes that the driveway will have a cross-slope of 5%. The plans should be revised so that a 2% cross-slope is provided along the accessible pedestrian route along the sidewalk.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
[T.Y. Lin International]T.Y. Lin International
12 Northbrook Drive
Falmouth, ME 04105
207.781.4721 (main)
207.347.4354 (direct)
207.400.0719 (mobile)
207.781.4753 (fax)
thomas.errico@tylin.com<mailto:thomas.errico@tylin.com>
Visit us online at www.tylin.com<http://www.tylin.com>
Twitter | Facebook | LinkedIn | YouTube

"One Vision, One Company"

Please consider the environment before printing.

From: David Margolis-Pineo
To: ewilliams@sgceng.com; fred.lamontange@majellagt.com
CC: Barbara Barhydt; Benjamin Pearson; Helen Donaldson; Jean Fraser; Jeff Levine; John Emerson; Nancy Gallinaro; Rachel Smith; Rick Knowland; Scott Firmin; Shukria Wiar
Date: 12/2/2015 2:50 PM
Subject: Wastewater Application Approval for 28 Thomas St
Attachments: David Margolis-Pineo.vcf

December 2, 2015

RE: The Capacity to Handle Wastewater Flows from 32 Thomas Street
Five Unit Residential Sub-Division and Business Offices

Dear Mr. Lamontange: (fred.lamontange@majellagt.com)

The Department of Public Works, which includes the Water Resource Division have reviewed and determined that the downstream sewers from 28 Thomas Street has the capacity to convey the estimated 1,314 gallons per day of wastewater which will be generated from this facility. You are reminded that the sewer you are proposing to connect to is combined and therefore a backflow preventer is required. This system surcharges frequently. Although not require, it is recommended that the applicant infiltrate stormwater runoff from this site where possible.

If the City can be of further assistance, please call 874-8850 or 400-6695.
Sincerely,

CITY OF PORTLAND

David Margolis-Pineo

David Margolis-Pineo
Deputy City Engineer
Department of Public Services
55 Portland St.
Portland, ME 04101
Office 207-874-8850
Fax 207-874-8852
Cell 207-400-6695
dmp@portlandmaine.gov

Anticipated Wastewater Flows from the Proposed Five Unit Residential Sub-Division and Business Offices:

13 Bedrooms @ 90 gpd/bedroom = 1,170 gpd
12 Staff @ 12 gpd = 144 gpd
Total: 1,314

CC: Jeffrey Levine, 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
Nell Donaldson, Department of Planning and Urban Development, City of Portland
Shukria Wiar, Planner, Department of Planning and Urban Development, City of Portland
Jean Fraser, Planner, Department of Planning and Urban Development, City of Portland
Rick Knowland, Planner, Department of Planning and Urban Development, City of Portland
Nancy Gallinaro, Water Resources Manager
Benjamin N. Pearson, E.I., Industrial Pretreatment Coordinator, City of Portland
Rachel Smith, Industrial Pretreatment Program, City of Portland
John Emerson, Wastewater Coordinator, City of Portland
Scott Firmin, Director of Wastewater, Portland Water District
Eric Williams, SGC Engineers

Att. 8

From: Deb Andrews
To: Jean Fraser
Date: 12/2/2015 2:39 PM
Subject: Williston West - final site plan

Dear Jean,

At your request, I have reviewed the final site plan submitted by Garrison Consulting for the Planning Board's December 8 public hearing on the proposed change of use of the Williston West Parish Hall. This is to confirm that the submitted site plan satisfies all of the outstanding conditions of approval associated with the Historic Preservation Board's November 18, 2015 approval of the project. The Historic Preservation Board reviewed both the proposed site alterations as well as the proposed building addition that will replace an existing connector that links Williston West's Parish Hall and Church.

Deb Andrews
Historic Preservation Program Manager

PC1

MEMO

To: Portland Planning Board, Elizabeth Boepple, Chairman
From: O. E. Delogu, a homeowner at 22 Carroll Street, Unit #8, Portland, ME 04102
Subject: Application brought by 32 Thomas Street LLC, Mr. Frank Monsour, principal, for five units of housing in the Parish House portion of property located at 26-32 Thomas Street, Port. ME 04102,
Date: October 12, 2015

Comment: I support, and fully endorse the expanded residential use of the Parish House before you this evening. Indeed, it has been my view from the outset of Mr. Monsour's acquisition of the property and his dealings with the Planning Board and City Council, that residential use was/is the most appropriate use of the Parish House.

In the housing market that existed in the neighborhood in early 2012 (and more so today) upscale residential units (whether rental or condominium) were/are in great demand. These are long-standing permitted uses in the R-4 zone; such housing is clearly consistent with existing development/uses in the neighborhood; such housing will more fully than the contentious, but now permitted, office uses provide the "necessary economic value" that will allow the restorative work Mr. Monsour has outlined to be completed.

Mr. Monsour originally advanced the "economic necessity" argument to justify the office uses he sought. These uses he said would provide an economic return that would facilitate the degree of preservation this Board and the City Council sought. You and the Council accepted his reasoning; so did the Law Court. But Mr. Monsour has never used the Parish House for office uses; no office uses exist in the Parish House today; there has been no economic return from office uses. Now Mr. Monsour is before you wanting to adjust not just the number of housing units in the Parish House, but some of the historic preservation commitments express and implied in the Contract Zone.

Fair enough—times change. The economic benefits of office uses in the West End may well have declined. The economic benefits of upscale housing in the West End were high in 2012 and are higher today. The disagreements and rancor of litigation and the immediate past should not obscure today's economic realities. Increased residential reuse of the Parish House will provide a more secure economic base for planned historic renovations than the limited office uses sought in 2012—the Monsour application tacitly acknowledges this. A full residential build out of the Parish Hall would further strengthen this economic base.

One wonders why Mr. Monsour has not sought a sixth residential unit in, a full residential build out of, the Parish House. The space is available—a variance of slight dimension (far less intrusive than office uses in the R-4 zone) is all that would be needed. This Board knows there is no tradition of office uses in the West End Historic District, in the R-4 zone; you also know (more so than any other regulatory body in the city) that the office needs of Mr. Monsour, (Majella Technologies) can be met in other appropriately zoned areas in Portland.

Conclusion: Given these practical and economic realities, I would urge this Board to recommend to the City Council that the present contract zone be amended to permit a full residential build out of the Parish House, thereby eliminating office uses in the Parish House; the latter provide no economic benefit and simply are not needed. This recommendation is both in line with the developer's current proposal (it simply extends slightly the developer's own

reasoning) and will more fully achieve the historic preservation goals of the city than the present contract zone.

Finally, the disposition of this matter along the lines recommended in this memo provides a win/win situation for all concerned—the uncertainties and contentions in the neighborhood with respect to now permitted office uses goes away; historic preservation goals are made more secure; additional housing (a high priority in Portland) will be provided. In short, by advancing the recommendation outlined in this memo, the Planning Board would be a vehicle for conciliation, and would be acting well within its authority and area of expertise.

Respectfully Submitted,

O. E. Delogu

PC2

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53 EXCHANGE STREET
P.O. BOX 597
PORTLAND, MAINE 04112-0597

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WEB SITE
www.krz.com

October 16, 2015

Portland Planning Board
c/o Jean Frasier
Portland City Hall
389 Congress Street
Portland, Maine 04101

Re: 32 Thomas Street LLC/ Williston

Dear Chairperson Boepple and members of the PPB:

I appeared at the PPB workshop hearing on October 13, 2015, and spoke in support of the current proposal for 5 residential units in the former Williston parish hall. I expressed the view that the need for more residential housing is a prevalent theme in the City, and this conversion would help provide an economic base for the preservation of the site. The developer also must see this proposal as a sound economic re-use by proposing a change from the original CZA. I further expressed the view that a conversion to a sixth unit, in the place of a nascent business office, would further support the long-term preservation and would find strong community support. I hoped the PPB could recommend and/or facilitate such a further development change. There was also a suggestion from another abutter, Sid Tripp, that further parking might be available on his property. A full residential build-out of the parish hall would create a dynamic for repurposing as well the former sanctuary for residential purposes or as adjunct space for the parish hall residential units, thereby avoiding a potentially contentious debate over using the former sanctuary for performance activities.

At the workshop hearing, an issue arose as to whether the CZA has expired due to a failure to commence the work required under the CZA within 6 months of the approval (paragraph 6), as modified by Paragraph 7, which Paragraph 7 recites in relevant part:

> If any required approval, including the City Council's approval of this AGREEMENT, has been

appealed or becomes the subject of litigation, then the required performance time frames contained in this AGREEMENT shall be measured from the final disposition of any such appeal or litigation.

As you are aware, there was litigation and it ended in favor of the City with a Law Court decision in October of 2014. The Law Court remanded the case to the Superior Court to vacate the prior Superior Court decision adverse to the City, and to enter the Law Court remand as a judgment in favor of the City. That was done by the Superior Court on November 6, 2014. At that point, the litigation was ended and the matter was final.

Over a month later, on December 12, 2014, apparently based upon some communication to the City attorney from the Superior Court Clerk's Office confirming that the litigation had become final when the remand was entered on November 6, 2014, the City attorney adopted the December 12, 2012, based on when the City attorney realized that nothing further was to happen.

The first work done to comply with the CZA appears to have occurred on June 10, 2015, two days before the 6 month's expiration if measured from December 12, 2014 date, but more than 30 days after the sixth month expiration from November 6, 2014. The work consisted of some minor repointing of some side-steps leading into the former sanctuary portico.

I am attaching an email string between myself and Danielle West-Chuhta which defines the question for your review. This may remain an issue so long as the proposed office use is contemplated, but not if there is a full residential build-out.

Very truly yours,

U. Charles Remmel, II

UCR/kaj
Enclosure
cc: Danielle West-Chuhta, Esq.
Mary Costigan, Esq.
Prof. Orlando Delogu
Anne Pringle

Charles Remmel

From: Danielle West-Chuhta <dwchuhta@portlandmaine.gov>
Sent: Tuesday, July 07, 2015 3:27 PM
To: Charles Remmel
Cc: Anne Pringle; Jeff Levine
Subject: RE: Williston/Monsour

Attorney Remmel:

I am not trying to be clever or cute either. I think that the developer has complied with the Conditional Zone Agreement and so I do not believe that the City will not be moving forward with any action against them in this matter.

Thank you for your time,

Danielle

Danielle P. West-Chuhta
Corporation Counsel
City of Portland, Maine
(207) 874.8480

>>> "Charles Remmel" <cremmel@krz.com> 7/7/2015 3:22 PM >>>
Danielle-I guess I don't understand, and I am not trying to be clever or cute. The case was over when the Superior Court decision was vacated and the remand determination entered. That was Nov. 6, 2014. You say you were mistaken in thinking something else was to happen. When you learned that there was nothing else, then you selected the date of your personal awareness as the measurement date. I am not sure who you notified of your choice, or where or to whom anyone would go if they didn't like your personal awareness date, since the case was over.

If we look at the CZA, it says the date is measured from the date when any legal objections are finally determined. We know that date is November 6 and is not your personal awareness date.

Are you saying you can amend the Council action in some way by picking some other date?

U. Charles Remmel II
Kelly, Remmel & Zimmerman
53 Exchange Street
P.O. Box 597
Portland, Maine, 04112
(207) 775-1020, Ext. 205

From: Danielle West-Chuhta [mailto:dwchuhta@portlandmaine.gov]
Sent: Tuesday, July 07, 2015 2:53 PM
To: Charles Remmel
Cc: Anne Pringle
Subject: Re: Williston/Monsour

Attorney Remmel:

My e-mail below is correct. I had been waiting for a final communication from the Superior Court (since the Law Court had remanded it) indicating that the matter was closed/final. Ultimately, on December 12, 2014, I contacted the Court and learned that there would be nothing additional provided. Based on this, and since it was my mistake that something further would be provided, we used the December 12th date to establish deadlines. I notified all parties of this fact in December, and no one objected.

Thank you for your time,

Danielle

Danielle P. West-Chuhta
Corporation Counsel
City of Portland, Maine
(207) 874.8480

>>> "Charles Remmel" <cremmel@krz.com> 7/7/2015 2:41 PM >>>
Danielle-In your careful advocacy for the City, you were successful in getting the Superior Court decision reversed and remanded. Anne Pringle has copied me on some communications she has had with Jeff Levine in which she is inquiring what is occurring on the former church property.

In those commutations, Jeff Levine has indicated that the City is using December 12, 2014 as the date when the Law Court decision on remand became final. I find this confusing since the Law Court allows 14 days before forwarding the remand which was measured from the date of the decision of October 16, 2014. The Superior Court received the remand and vacated the Superior Court decision of Judge Wheeler and entered the Law Court remand as the case decision on the Superior Court docket on November 6, 2014. At that point the case was final and over.

I did find this communication below from you to Anne using December 12, 2014, but it doesn't seem to relate to anything other than possibly a letter response from a Court Clerk confirming that the case was in fact over, which it was on November 6, 2014. Of course, you might have written to the Clerk at any time and the timing of the Clerk's response confirming the termination in the City's favor would not appear to have much relevance to when the case ended and the decision was final in the courts. I double-checked with the Superior Court clerk before sending this and they confirm that November 6 is the final termination of the action.

Perhaps you could think about this and let me know why the date of December 12 has any bearing.

> Anne:
>
> I just heard from the court that nothing further would be issued and that this matter is final. As such, the deadlines in the conditional zone agreement will based on the date of that correspondence from the Court or December 12, 2014. I have also notified the applicant of this fact.
>
> Thanks,
>
> Danielle

Danielle P. West-Chuhta
Corporation Counsel
City of Portland, Maine
(207) 874.8480

U. Charles Remmel II

Kelly, Remmel & Zimmerman
53 Exchange Street
P.O. Box 597
Portland, Maine, 04112
(207) 775-1020, Ext. 205

MEMO

To: Portland Planning Board, Elizabeth Boepple, Chairman
From: O. E. Delogu, a unit owner at 22 Carroll Street, Portland, ME 04102
Subject: Application brought by 32 Thomas Street LLC, Mr. Frank Monsour, principal, to expand the number of housing units in the Parish House (PH) portion of the Williston Church property from two units to five, and associated other modifications of the existing Conditional Zone Agreement (CZA), Council Order 214—11/12
Date: December 6, 2015

Introductory Note: I apologize to the Chairman and the Board for my absence from the Board's hearing of the above agenda item. I have a prior out-of-state family commitment on December 8th. I have asked that this memo be read at the hearing, and that it be made a part of the record of the Board proceedings on this matter.

Substantive Comment: I support, and fully endorse residential use of the PH. Indeed, it has been my view from the outset of the Developers acquisition of the property and throughout his dealings with the Planning Board (PB) and City Council, that residential use was/is the most appropriate use of the PH . **That said, I would urge the PB to extend the Developer's present proposal to its logical conclusion, and recommend a 6th residential unit in the PH.**

The Developer initially asserted that office uses in the PH were necessary to provide the economic base to enable the rehabilitation/restoration work required by the Historic Preservation Ordinance. He successfully argued that such uses justified the CZA. But he has never used the PH for (owner related business) office uses. No such uses exist in the PH today. There has been no economic return from such office uses.

The Developers present actions speak louder than past words. Nearly four years after acquiring the property the proposal now before the PB recognizes that expanding the number of residential units in the PH, not office uses, is the most utilitarian use of the PH. Given todays housing market, residential use will provide the economic base needed to restore the Willison structures.

Given these practical and economic realities, one wonders why the Developer himself has not sought a 6th residential unit (a full residential build out) of the PH. The space is available—a variance of slight dimension is all that would be needed. His reluctance, however, does not bar the PB from recommending this course of action to the City Council.

A full residential buildout of the PH is both in line with the Developers proposal (it simply extends the Developers own reasoning) and more realistically allows the historic preservation goals of the city to be achieved. Moreover, it provides a win/win/win situation for all concerned. The uncertainties and contentions in the neighborhood with respect to now permitted office uses goes away; historic preservation goals are made secure; additional housing (a high priority in the city) will be provided.

An Important Caveat: Beyond expanding the number of residential units in the PH (from two to five), the Developers proposal now before you would eliminate the existing connector between the PH and Sanctuary; create a new entrance to the PH; relocate the driveway; create new onsite parking spaces; remove the existing garden area and a handicap ramp to the Sanctuary; and build a whole new walkway running along the rear and side of the PH to Thomas Street. Other, more minor, changes are also part of the proposal.

In short, the Developers proposal (attractive in many respects) would significantly alter the CZA adopted by the City Council and embodied in Order 214—11/12. Correctly seen, it is a proposal to amend the existing CZA. And stating the obvious—the PB does not have the legal power to amend a Council adopted CZA.

The Developer (and Corporation Counsel) would avoid these seemingly self-evident limitations on PB powers by asserting that the PB may administratively dispose of the present proposal—a final decision on the proposal rests with the PB. They argue that the Whereas clauses (which limit the number of residential units in the PH to two) and Attachment 1 (which precludes almost all of the other proposed changes) are not really a part of the CZA.

This reasoning is legally incorrect. In a Memo prepared for the City Manager and the Corporation Counsel[1] (and vetted by outside counsel) I have urged that this reasoning be reconsidered. Changes to a Council approved CZA of this order of magnitude can not (should not) be left in the hands of the PB. One excerpt from the Memo must suffice here:

> **"Under Maine law, in the absence of anything to indicate a contrary intention, instruments executed at the same time, by the same contracting parties, for the same purposes, and in the course of the same transaction will be considered and construed together, since they are, in the eyes of the law, one contract or instrument."**[2]

With the Whereas clauses and Attachment 1 seen as integral parts of the CZA, it follows that the PB can/should see the Developers proposal as a related series of amendments to the existing CZA. The PB may recommend what it will to the City Council. As it did with the initial CZA, the PB may fine tune or condition elements of the Developers proposal to amend the CZA in passing it forward to the Council. That is the extent of their powers.

Conclusion: For the reasons stated in the concluding paragraph of my Substantive Comment, I would again urge the PB to recommend a full residential build out of the PH to the City Council. It is not often that win/win/win opportunities arise—they exist here.

---

[1] A copy of this more detailed legal memo is in the hands of the City Manager and Corporation Counsel.

[2] Combined Energies v. CCI Inc., 514 F3d 168 (1st Cir. 2008) at pg. 173.

WESTERN PROMENADE NEIGHBORHOOD ASSOCIATION

December 7, 2015

Re: 32 Thomas, LLC

Portland Planning Board
389 Congress Street
Portland, ME 04101

The Western Prom Neighborhood Association ("WPNA") offers the following comments on the request of 32 Thomas, LLC for Planning Board Approval of a substantially revised plan for the former Williston West premises.

1) From the beginning, the WPNA has been supportive of the concept of re-purposing at least the Parish House portion of the Williston premises for residential use. Much has been written recently about the need for more housing units on the peninsula, with the strong demand for units and rising rents. The proposed change from the original Contract Zone from 2 to 5 residential units is a positive development, and supported by the WPNA.

It is the understanding of the WPNA that 6 residential units may be possible, but the square footage currently limits that option. A complete conversion to 6 residential units could be accomplished by a modification of the Contract Zone Agreement, and the elimination of the proposed office use. As it appears that the approved offices (the driving force behind the requested Contract Zone) have never been occupied, it seems appropriate to reflect the housing market demand and convert the unused office space to another unit of housing. The WPNA strongly supports such a modification as consistent with the City's Comprehensive Plan to expand the range of housing options.

While proposed as rental units, it is conceivable that the units could be converted to condos at some point in the foreseeable future, given the strong market in our neighborhood. Optional space for additional parking is available, potentially leased from an abutter by eliminating the linkage between the buildings and accessed through the space between them. This would serve residents by providing adequate off-street parking, as well as avoid the need to create parking in the courtyard space, which could be retained as a landscaped area.

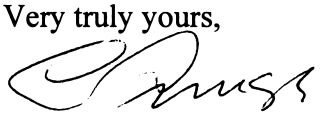
2) That said, it is concerning to the WPNA that the Contract Zone as approved by the City Council is being substantially modified without the requisite Council approval of the changes and amendments. Professor Orlando Delogu has submitted a detailed enumeration of the proposed changes that go beyond what was approved. WPNA agrees that it is clear that Council approval is the required path for major changes to any contract zone, specifically that the second and floor residential units are being proposed for rental rather than occupancy by family members, as originally represented to the Council.

3) Furthermore, WPNA also believes that the work required and delineated by the terms of the Contract Zone was not commenced within the six months following the date when the lawsuit challenging the appproval of the zone became final. The schedule for starting work was missed by nearly 45 days. Under the terms of the Contract, failure to meet that start date was to result in the reversion of the entire property to the underlying R-4 zone. While the developer may now wish to count work done prior to the time it even received the Contract Zone approval, the Contract Zone Agreement is prospective with respect to starting and performing the required work and the failure to meet the start date should be enforced.

As noted above, the residential market in our neighborhood is very strong and WPNA does not believe the developer will suffer a financial loss by forfeiting the office use through City enforcement of the contract provision relating to reversion to the R-4, but rather realize significant gain by meeting market demand for residential housing.

Therefore, WPNA asks the Planning Board to recommend to the City Council amendment of the Contract Zone Agreement to replace the office use, forfeited by failure to meet the contract terms, by an additional (sixth) residential unit.

Very truly yours,



Anne B. Pringle
President

Att. A

GARRISON CONSULTING

August 10, 2015

Portland Planning Board
389 Congress Street
Portland Maine, 04101

Re: Preliminary Submission for Site Plan Review
32 Thomas St – Williston West Church

Dear Chair O'Brien and Members of the Planning Board,

On behalf of 32 Thomas Street LLC please accept and consider this submission for site plan review for the conversion of the parish house at 32 Thomas Street to 5 residential dwelling units and office use. The work proposed meets the requirements of the conditional rezoning agreement for the property as well as the underlying requirements for the R4 Zone, which in part are applicable to this submission.

This submission includes:

- A completed application and fee.
- A narrative of the proposed work and compliance with the requirements
- Deed for the property
- Existing site plan and existing conditions analysis
- Preliminary utility plan and site plan
- Illustrative landscape plan and exterior elevations.

Along with this submittal, we are concurrently submitting to the Zoning Board of Appeals as required for conditionally allowed uses in the R4. In addition we are submitting to Historic Preservation for approval of the proposed modifications to the courtyard per the requirements of the historic designation of the property.

We look forward to submission of a Final Plan - Level III Site Plan application and subsequent presentations to the planning board.

Sincerely,



Matthew G Winch, Architect
Principal

A Maine Licensed Architect

41 Edgewood Avenue Portland, ME 04103
(207) 450-0750
matthewwinch@earthlink.net

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

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. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are ***paid in full*** to the Inspections Office, City of Portland Maine by method noted below:

☐ Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☑ I intend to hand deliver a check.
Within 24-48 hours, ~~once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.~~

☐ I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

M. Coul
Applicant Signature: August 10, 2015 Date:

I have provided digital copies and sent them on: August 10, 2015 Date:

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.

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) 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
(207) 874-8719

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

Updated: June 1, 2015

PROJECT NAME: 32 Thomas Street Apartments

PROPOSED DEVELOPMENT ADDRESS:

32 Thomas Street

PROJECT DESCRIPTION:

Conversion of old John Calvin Stevens Parish House to 5 new residential dwelling units. The development would maintain the +/- 2,600 SF of previously approved office use. See the attached narrative included with this submission for additional project details.

CHART/BLOCK/LOT: Chart 62 Block E Lot 5

PRELIMINARY PLAN August 10, 2015 (date)
FINAL PLAN _____ (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Prof. Frank Monsour Business Name, if applicable: 32 Thomas St LLC Address: 32 Thomas St City/State : Portland, ME Zip Code: 04101	**Applicant Contact Information** Work # (207) 774-4060 Home# Cell # Fax# e-mail: 32thomas@majellaenterprises.com
Owner – (if different from Applicant) Name: Address: City/State : Zip Code:	**Owner Contact Information** Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Garrison Consulting Matthew Winch, Architect Address: 41 Edgewood Ave City/State : Portland, ME Zip Code: 04103	**Agent/Representative Contact information** Work # (207) 450-0750 Cell # e-mail: matthewwinch@earthlink.net
Billing Information Name: 32 Thomas St LLC Address: 32 Thomas St City/State : Portland, ME Zip Code: 04101	**Billing Information** Work # (207) 774-4060 Cell # Fax# e-mail: fred.lamontange@majellaenterprises.com

Engineer	**Engineer Contact Information**
Name: SGC Engineering, LLC, Eric Williams, PE Address: 501 County Road City/State : Westbrook, ME Zip Code: 04092	Work # (207) 347-8137 Cell # (207) 615-9232 Fax# e-mail: ewilliams@sgceng.com
Surveyor	**Surveyor Contact Information**
Name: Northeast Civil Solutions, Jim Fisher Address: 381 Payne Road City/State : Scarborough, ME Zip Code: 04074	Work # (207) 883-1000 Cell # Fax# e-mail: jim.fisher@northeastcivilsolutions.com
Architect	**Architect Contact Information**
Name: Garrison Consulting Matthew Winch, Architect Address: 41 Edgewood Ave City/State : Portland, ME Zip Code: 04103	Work # (207) 450-0750 Cell # Fax# e-mail: matthewwinch@earthlink.net
Attorney	**Attorney Contact Information**
Name: Mary Costigan Bernstein Shur Sawyer & Nelson Address: 100 Middle Street City/State : Portland, ME Zip Code: 04101	Work # Cell # Fax# e-mail:

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)

Level III Development (check applicable reviews)

_X_ Less than 50,000 sq. ft. ($500.00)
___ 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 $300,00 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 ($40.00 hour)
- Legal Review ($75.00 hour)

Third party review fees are 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)
_X_ Subdivisions ($500 + $25/lot)
# of Lots _6_ x $25/lot = _$150_
___ Site Location ($3,000, except for residential projects which shall be $200/lot)
# of Lots ___ x $200/lot = _____
___ Other _____
_X_ Change of Use
___ Flood Plain
___ Shoreland
___ Design Review
___ Housing Replacement
_X_ Historic Preservation

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal

2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. **One (1) full size site plans** that must be **folded.**
2. One (1) copy of all written materials or as follows, unless otherwise noted:
   a. Application form that is completed and signed.
   b. Cover letter stating the nature of the project.
   c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

APPLICANT SIGNATURE:

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:**
	August 10, 2015

PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	17,998 sq. ft.
Proposed Total Disturbed Area of the Site	Approx 15,500 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)	13,800 sq. ft.
Impervious Area (Total Proposed)	Approx 14,700 sq. ft.
Building Ground Floor Area and Total Floor Area	
Building Footprint (Total Existing)	12,000 sq. ft.
Building Footprint (Total Proposed)	12,000 sq. ft.
Building Floor Area (Total Existing)	19,400 sq. ft.
Building Floor Area (Total Proposed)	20,030 sq. ft.
Zoning	
Existing	Conditional Use
Proposed, if applicable	N/A
Land Use	Religious assembly, daycare,
Existing	community and social service programs.
Proposed	Residential, office.
Residential, If applicable	
# of Residential Units (Total Existing)	0
# of Residential Units (Total Proposed)	5
# of Lots (Total Proposed)	1
# 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)	2
# of Three-Bedroom Units (Total Proposed)	3
Parking Spaces	
# of Parking Spaces (Total Existing)	2
# of Parking Spaces (Total Proposed)	4
# of Handicapped Spaces (Total Proposed)	0
Bicycle Parking Spaces	
# of Bicycle Spaces (Total Existing)	0
# of Bicycle Spaces (Total Proposed)	0
Estimated Cost of Project	$1,400,000

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

Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
		1	* Completed Application form
		1	* Application fees
		1	* Written description of project
		1	* Evidence of right, title and interest
		1	* Evidence of state and/or federal permits
		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
		1	* Evidence of financial and technical capacity
		1	Construction Management Plan
		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
		1	Stormwater management plan and stormwater calculations
		1	Written summary of project's consistency with related city master plans
		1	Evidence of utility capacity to serve
		1	Written summary of solid waste generation and proposed management of solid waste
		1	A code summary referencing NFPA 1 and all Fire Department technical standards
		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	**(* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	**Final Site Plans including the following:**
		Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);	
		Existing and proposed structures on parcels abutting site;	
		All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;	
		Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;	
		Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;	
		Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;	
		Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;	
		Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;	
		Location of all snow storage areas and/or a snow removal plan;	
		A traffic control plan as detailed in Section 1 of the Technical Manual;	
		Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);	
		Location and proposed alteration to any watercourse;	
		A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;	
		Proposed buffers and preservation measures for wetlands;	
		Existing soil conditions and location of test pits and test borings;	
		Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;	
		A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;	
		Grading plan;	
		Ground water protection measures;	
		Existing and proposed sewer mains and connections;	

- Continued on next page -

		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
2.
3. Name address, telephone number of architect

4. Proposed uses of any structures [NFPA and IBC classification]
5.
6. Square footage of all structures [total and per story]

7. Elevation of all structures

8. Proposed fire protection of all structures
   - ***As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)***

9. Hydrant locations

10. Water main[s] size and location

11. Access to all structures [min. 2 sides]

12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.

Some structures may require Fire flows using annex H of NFPA 1

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

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

Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail:fjb@portlandmaine.gov

Date: _____

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

Site Address: _____

Chart Block Lot Number: _____

Proposed Use: _____
Previous Use: _____
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: _____
Owner/Developer Address: _____
Phone: _____ Fax: _____ E-mail: _____
Engineering Consultant Name: _____
Engineering Consultant Address: _____
Phone: _____ 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: _____ GPD
Peaking Factor/ Peak Times: _____
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: _____

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

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

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: _____ GPD

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

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

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

Peaking Factor/Peak Process Times: _____

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

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

Notes, Comments or Calculation

Att. B

WARRANTY DEED
Maine Statutory Short Form

KNOW ALL BY THESE PRESENTS, that **WILLISTON-WEST CHURCH, a/k/a Williston-West United Church of Christ, successor in interest to Williston Church,** a Maine non-profit corporation having a place of business at Portland, County of Cumberland, and State of Maine, for consideration paid, grants to **32 THOMAS STREET, LLC**, a Maine limited liability with a place of business in Portland, County of Cumberland and State of Maine, whose mailing address is 477 Congress Street, Suite 601, Portland, Maine 04101, with **WARRANTY COVENANTS,** the land, together with any improvements thereon, located in the City of Portland, County of Cumberland and State of Maine, and more particularly described in Exhibit "A" attached hereto and made a part hereof.

MAINE REAL ESTATE TAX PAID

IN WITNESS WHEREOF, said WILLISTON-WEST CHURCH has caused this instrument to be signed and sealed by Patrick Costin, its duly-authorized Chairman of the Board of Trustees this 19TH day of December, 2011.

WITNESS:

WILLISTON-WEST CHURCH,
a/k/a Williston-West United Church of Christ, successor in interest to Williston Church

By: Patrick Costin
Its: Chairman of Board of Trustees

STATE OF MAINE
COUNTY OF CUMBERLAND

December 19, 2011

Personally appeared before me the above-named Patrick Costin, Chairman of the Board of Trustees, and acknowledged the foregoing to be his free act and deed in said capacity and the free act and deed of said church.

~~Notary Public~~/Attorney at Law

Peter L. Murray
Printed Name

EXHIBIT A
TO
WARRANTY DEED

Two certain lots or parcels of land, together with any improvements thereon, situated in the City of Portland, County of Cumberland and State of Maine and further described as follows:

PARCEL 1: A certain parcel of land located in said Portland bounded as follows. Beginning at the corner made by the intersection of the Westerly side of Thomas Street unto the Southerly side of Carroll Street; thence Southerly by said Westerly side of Thomas Street one hundred and five (105) feet to a point; thence Westerly on a line parallel with said Southerly side of Carroll Street one hundred (100) feet to a point; thence Northerly on a line parallel with said Westerly side of Thomas Street one hundred and five (105) feet to said Carroll Street; thence Easterly by said Carroll Street to the point begun at. Being the same premises described in two certain agreements between Abby A. Steele and John H. True. Being the premises described in a deed from Abby A. Steele to Williston Church dated April 13, 1886 and recorded in the Cumberland County Registry of Deeds in Book 525, Page 221.

PARCEL 2: Property located in said Portland, being the premises described in a deed from Edward P. Chase to Williston Church dated September 9, 1897 and recorded in the Cumberland County Registry of Deeds in Book 652, Page 460.

Also hereby conveying all of the Grantor's right, title and interest in and to the fee underlying all public or private rights-of-way, easements, streets and alleys over, contiguous, benefitting or appurtenant to the premises.

The above described property is conveyed subject to an Easement from Williston Church to Central Maine Power and New England Telephone and Telegraph dated November 11, 1970 and recorded in said Registry of Deeds in Book 3157, Page 51.

By acceptance of this deed, Grantee agrees, for itself and its successors and assigns, that should the Grantee, its successors or assigns, at any time desire to demolish or alter the building on the property conveyed herein as to result in material damage to or removal of the stained glass windows, pipe organ and church bell, the Grantor shall have the right to remove and repossess the affected stained glass windows, pipe organ and church bell, without charge, but at its own expense, for preservation, recycling and/or re-use by Grantor, its successors and assigns, at Grantor's other location or elsewhere; provided, however, that Grantor, its successors or assigns, shall at its own expense reasonably restore any portion of the property disturbed by such removal activities.

Meaning and intending to describe the same property as described in a deed from Abby Steele to Williston Church, dated April 13, 1886 and recorded in said Registry of Deeds in Book 525, Page 221and in a deed from Edward Chase to Williston Church, dated September 9, 1897 and recorded in said Registry of Deeds in Book 652, Page 460.

The above-described premises were surveyed by Northeast Civil Solutions as shown on a "Boundary Survey of 26 Thomas Street, Portland, Maine" dated December 13, 2011, and the Grantor conveys all right, title and interest in and to the metes and bounds description as follows:

A certain lot or parcel of land, together with any improvements thereon, located on the southerly side of Carroll Street and on the westerly side of Thomas Street, in the City of Portland, County of Cumberland, State of Maine, being more particularly bounded and described as follows:

BEGINNING at a #5 rebar w/cap stamped "NCS, INC PLS 1314" at the intersection of the southerly right-of-way line of Carroll Street and the westerly right-of-way line of Thomas Street. Said rebar being shown on a plan entitled "Boundary Survey of 26 Thomas Street, Portland, Maine" by Northeast Civil Solutions, dated December 13, 2011;

THENCE S 17°46'20" W along the westerly right-of-way line of said Thomas Street 180.00' to a #5 rebar w/cap stamped "NCS, INC PLS 1314". Said rebar being the northeasterly corner of land now or formerly of McKee Associates LLC as recorded in a deed recorded in the Cumberland County Registry of Deeds in Book 15262, Page 140;

THENCE N 72°58'37" W along the northerly line of land now or formerly of said McKee Associates LLC, 100.00' to a #5 rebar w/cap stamped "NCS, INC PLS 1314";

THENCE N 17°46'20" E along the easterly line of said McKee Associates LLC, land now or formerly of Sidney Tripp as recorded in a deed recorded in said Registry of Deeds in Book 15671, Page 307 and land now or formerly of McLellan School Houses Condominiums 180.00' to a #5 rebar w/cap stamped "NCS, INC PLS 1314". Said rebar being on the southerly right-of-way line of Carroll Street;

THENCE S 72°58'37" E along the southerly right-of-way line of said Carroll Street 100.00' to the POINT OF BEGININNG.

The above described parcel contains 17,998 square feet, more or less.

The basis of bearing for the above described parcel is Magnetic 1980.

Received
Recorded Register of Deeds
Dec 20,2011 02:21:24P
Cumberland County
Pamela E. Lovley

Att. C

Androscoggin Bank

130 Middle Street
Portland, Maine 04101
207.518.6300
1.800.966.9172
androscogginbank.com

8/11/2015

City of Portland
389 Congress Street
Portland, ME 04101

RE: 32 Thomas Street LLC

To Whom It May Concern:

On behalf of Androscoggin Bank, I am pleased to provide this letter of support for Frank Monsour for the Williston-West Church Historic Renovation. Based on our knowledge of Mr. Monsour's past projects, we believe that the applicant has the ability to finance projected costs and develop a project of similar type and scale from a fiscal perspective.

Further, based upon our discussions, we believe that Mr. Monsour possesses the skills and expertise to complete the proposed project on time and within budget.

While this letter is not a commitment to lend, Androscoggin Bank would welcome the opportunity. Please feel free to call me with any questions.

Sincerely,

Sean Rankin
Assistant Vice President
Androscoggin Bank

Member FDIC EQUAL HOUSING LENDER

Att. D

GARRISON CONSULTING

November 30, 2015

Portland Planning Board
389 Congress Street
Portland Maine, 04101

Re: Final Submission for Site Plan Review
32 Thomas St – Williston West Church

Dear Chair Boepple and Members of the Planning Board,

On behalf of 32 Thomas Street LLC please accept and consider this submission for Final Site Plan approval for the conversion of the Parish House at 32 Thomas Street to 5 residential dwelling units and office use. The work proposed meets the requirements of the conditional rezoning agreement for the property as well as the underlying requirements for the R4 Zone, which in part are applicable to this submission.

This submission includes:

- A completed application and fee.
- A narrative of the proposed work and compliance with the requirements
- Deed for the property
- Existing site plan and existing conditions analysis
- Preliminary utility plan and site plan
- Illustrative landscape plan and exterior elevations.

Prior to this submittal, we submitted to the Zoning Board of Appeals, as required for conditionally allowed uses in the R4, and received approval from that Board in October. In addition, we received approval from the Historic Preservation Board for a Certificate of Appropriateness on November 18, 2015.

We look forward to reviewing this submission of a Final Plan - Level III Site Plan application with the Planning Board soon.

Sincerely,



Matthew G Winch, Architect
Principal

A Maine Licensed Architect
41 Edgewood Avenue Portland, ME 04103
(207) 450-0750
matthewwinch@earthlink.net

Written Description of Project

Located on the Western Promenade, 32 Thomas Street is the location of the historic Williston West Church and Parish House. A cornerstone to the neighborhood, the church sanctuary, designed by renowned Architect Francis Fassett, was constructed in the 1870's. At this time Fassett was a mentor to a young John Calvin Stevens. Williston West Church celebrated its first service on September 1, 1878.

That service was led by Reverend Francis E Clarke, the founder of the Young People's Society of Christian Endeavor, later know as Christian Endeavor Society. It is with that amazing legacy that the future history of the church was built.

That legacy also led to the design and construction of the Parish House, the focus of this current submission to the Planning Board. Designed by the then established Architect John Calvin Stevens the Parish House fully transformed the church. Now it was not only a place of worship, but also as a home for related activities of the church that served community purposes.

The church was added to the National Register of Historic Places in 1980. Due to declining congregation, however, the church property was sold to a private entity (32 Thomas St LLC) in 2011 and the church merged with Emmanuelle Church. Known today as Williston Emmanuelle United Church, the congregation is now located in the Emmanuelle Church on High Street.

After the property was purchased, 32 Thomas St LLC requested and was granted a Conditional Zoning designation for the property. This designation allowed for the conversion of up to 2,800 SF of space in the Parish House for use as an office with a maximum of 14 staff and private off street parking for the staff. The agreement for this office use included the completion of an agreed to Rehabilitation Work Schedule (Exhibit B of the agreement).

At the time of this submission the rehabilitation of the bell tower (Item #2), installations of the temporary storm window (Item #7) and the reset and repair of the granite steps (Item #8) have all been completed. In addition, the work to repair or repoint the masonry in identified locations around the property (Items #3 and #4) has also been started. The final work from the rehabilitation schedule, replacement of the sanctuary roof with a new slate roof, copper flashings gutters and downspouts (Item #1) and the repair of the missing or leaky downspouts on the Parish House (Item #5) are all underway as well. Re-grading of the courtyard to create positive drainage away from the building will be completed last and will be incorporated into the proposed site landscape improvements to the courtyard, part of this submission to the City.

The proposed scope of work associated with this submission is for the conversion of 2,500 SF of ground floor space of the Parish House to office use, the conversion of the remaining ground floor space of the Parish House to one residential dwelling unit (Caretaker's Unit) and the conversion of the remainder of the building, the upper two floors of the Parish House, (approximately 8,000SF) to 4 residential dwelling units.

The proposed uses are allowable per the Conditional Zoning Agreement for the property and by the Conditionally Allowable Uses of the underlying R4 Zone. The following sections of the narrative evaluate each of the required components individually.

Compliance with Applicable Zoning

A copy of the Conditional Rezoning Agreement has been attached as Appendix A and is referred to, along with the R4 Zoning, in the evaluation of the proposed project's compliance with the applicable zoning for this site.

Permitted uses:

a. All uses in the R-4 Zone
b. Professional offices, including computer software programing and marketing, and excluding personal services, retail services and veterinarians subject to the following limitations:
    1. Professional offices shall be located on the first floor of the Parish House and shall occupy no more than 2,800 SF of floor area
    2. The total number of individuals working in the professional offices shall not exceed fourteen (14) non-resident employees regularly scheduled to occupy the premises at any one time.
    3. The business utilizing the office space shall be a single tenant office user owned by or affiliated with the owner of the building complex
    4. The office use shall not generate frequent daily visitation by clients customers, or the general public.
    5. The owner or operator of the business shall secure and provide to its employees one (1) off street parking space for each employee who commutes to the office by his or her automobile.

This submission includes an office use on the first floor of the Parish House that occupies approximately 2,500 SF of floor area.

The underlying dimensional requirements for the underlying R4 Zone apply, but for the following modifications, as per the Conditional Rezoning Agreement. These individual requirements are listed below (in regular type) followed by the established compliance to those requirements in this submittal (typed in bold type).

a. Minimum Lot Size for places of assembly and professional office uses combined 17,500 SF. **The lot size of the subject property is 17,998SF and is documented as such on the attached existing site survey.**
b. Minimum Yard Dimensions
    1. Front yard: 3 feet. **The existing Front yard of Parish House is 4'-0", the Sanctuary is 6'-10" at Thomas Street and 6'-9" at Carroll St.**
    2. Rear Yard: 3 feet. **The existing structure at the rear of the Parish House is 3'-9".**
    3. Side Yard: 4 feet. **The side of the existing Parish House structure at the side yard is 5'-0".**
    4. Side Yard on Side Streets: 8 feet. **Not applicable, neither Carroll nor Thomas St is considered a side street.**
c. Maximum Lot Coverage: 90%. **The existing footprint of the structures on the property is approximately 12,000 SF, providing a lot coverage of 67%.**
d. Maximum Structure height (Sanctuary): 37 feet. **The existing height of the Sanctuary is approximately 37 feet.**
e. Maximum Structure height (Parish House): 47 feet. **The existing height of the Parish House is approximately 47 feet.**
f. Maximum Structure height (Bell Tower): 70 feet. **The existing height of the Bell Tower is approximately 70 feet.**

g. Maximum Floor Area for Places of Assembly: 6,000SF. **N/A This submission does not include any provision or consideration for the use of the Sanctuary as a Place of Assembly.**
h. Residential dwellings within the existing structures shall be governed by the provisions of Section 14-103(a)(2) of the underlying R-4 Zone. Density calculations for residential use shall be based on the lot size of the parcel without land area deductions for other non-residential uses on the site. The owner of the property is proposing 5 residential dwelling units within the existing structure of the Parish House. **The R-4 Zone requires a minimum lot area of 3,000SF per unit and a minimum floor area of 700SF per unit. The proposal of 5 units requires 15,000SF of land area. As noted in previous sections of this submittal the existing land area of the site is 17,998 SF. The smallest unit of the 5 proposed is approximately 1,100 SF.**

The Conditional Rezoning Agreement prohibits the increase in volume or footprint of either the Parish House or the Sanctuary. **The submission includes the renovation of the existing portico connector between the Parish House and the transept of the Sanctuary as the main entrance to the residences in the Parish House. These modifications will not increase the footprint or the volume of the primary structures on the property.**



As noted in other sections of this submission, the Conditional Rezoning Agreement included a Rehabilitations Schedule (Exhibit B of the attached Appendix A). **That work has commenced and is underway**. **The Owner does not intend to seek a certificate of occupancy for the office use in the Parish House until all of the work on the Rehabilitation Schedule has been completed.**

In addition to the requirements above, the submission for 5 residential dwelling units is considered a sub-division, which is conditionally allowable in the R4 Zone. **These conditionally allowable uses were presented to and approved by the Zoning Board of Appeals in October 2015. The subdivision will also ultimately require a recording plat be submitted for the completed residential dwelling units.**

On site parking for the residential use is not required because of the historic designation of the property, however a site plan has been submitted indicating parking for up to four (4) vehicles on site. **The Historic Preservation Board approved the exterior site plan and courtyard design submission on November 18, 2015.**

Traffic Analysis

Traffic in the immediate vicinity of the property should be. The proposed 5 residential units will bring very little change to the overall traffic flows on the Western Promenade neighborhood streets. The same applies to the proposed office use. Any increase in traffic flows will not be significant and are a significant reduction in the traffic associated with the former uses of the property, which was a fully functioning church, with community outreach programs and a fully functioning daycare.

Stormwater Analysis

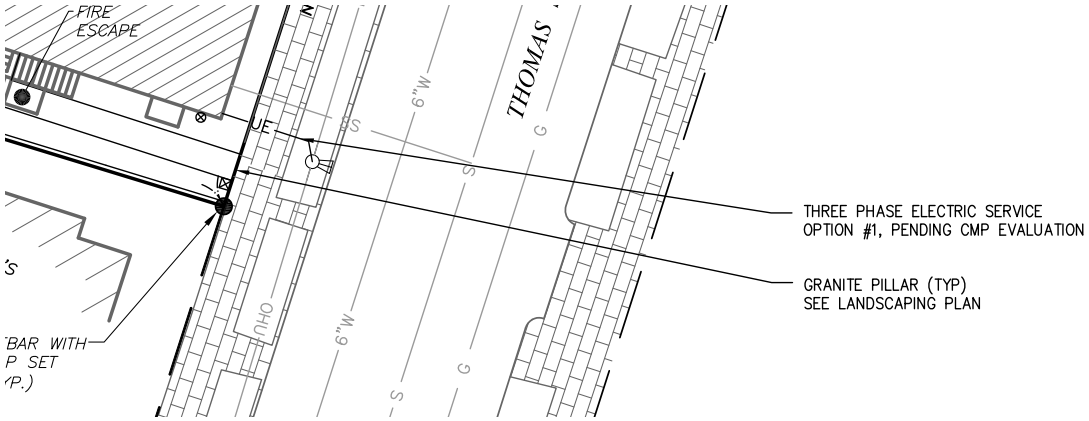
As a Level III Site Plan, the proposed development requires a Stormwater Management Plan per Section 5.2.C.b of the Stormwater Management Standards found in the City of Portland Technical Manual. The Stormwater Management plan must be pursuant to the Maine DEP Chapter 500 Stormwater Management Rules for basic, general, and flooding standards. As the development is a change of use and the existing footprint of the building will be utilized, the project results in only approximately 900 square feet of additional impervious area. This additional impervious area will likely be required for parking or driveway accommodations in the existing courtyard off of Thomas Street. While this is a negligible increase in comparison to the overall impervious area associated with the footprint of the building, there are approaches that will mitigate offsite impact. A shallow rain garden along the edge of the Church will absorb some on site run-off. This provides for both stormwater quantity and quality control.

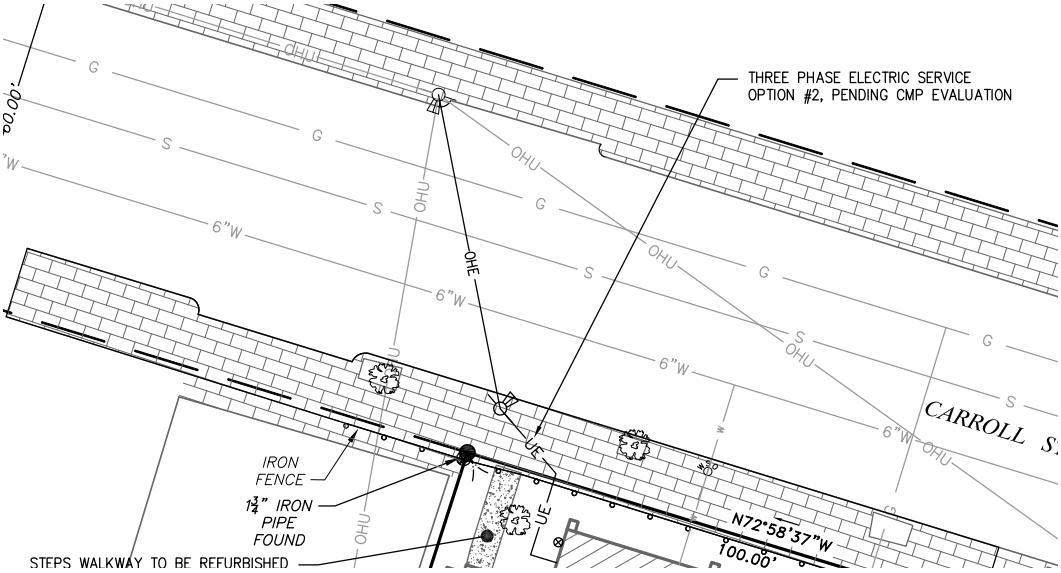
Utilities Analysis

The proposed development will utilize existing public utility services connected to common utilities in the adjacent right of ways of Thomas and Carroll Street. The existing building has access to water service from a 6-inch water main in Thomas Street that will be utilized. Domestic water service will be evaluated based on existing and proposed water usage and a determination will be made if the service size needs to be increased. The existing 6-inch fire service will similarly be evaluated to determine if future fire suppression demands will be adequately provided or if the service needs to be increased.

Sanitary sewer service for the existing building is 4-inch diameter leading to existing sanitary sewer main in Thomas Street. Based on the existing and proposed water usage that the project will generate, a flow analysis and wastewater capacity application has been submitted to the City with this updated application.

All other communication utilities that will service the proposed development are overhead and exist in Thomas and / or Carroll Streets. This includes electrical service, which is presently only a single-phase service. CMP is studying the most feasible location to pull 3-phase power overhead to the property where it will be buried in a vault on the subject site in either the northwest corner or southeast corner of the property.





Proposed Site Plan and Landscape Plan

The proposed scheme has been modified slightly from the preliminary plan submitted to the Planning Board in September, reflecting changes requested by the Historic Preservation Board. The two-entrance design remains, one for the Office users off the Thomas Street sidewalk and one for the Residential users off the reserved parking spaces in the Courtyard. There is on-site parking for four cars, one car for each of the residential units. This area has been slightly reduced in size, from a 42' width to 40' width and the materials have been simplified to solid Belgium block. All four cars are screened from public view by a planting of evergreen Hick's yews. (Anticipated height: 4'-5')

Pedestrian access to the office and residential entrances is via brick walkways. A new entrance to the site, from Thomas Street to the existing south Sanctuary door, has been added. This brick walk is located in the same location as a historic walk to the same entrance, seen in the 1931 historic photograph. A new set of granite steps will be installed from the courtyard to the door.



The service area remains located to the west of the Residential portico, screened from view by two screen walls. Access to this service area is from Thomas Street, via a paved sidewalk along the south and west walls of the Parish House.

The 1931 historic photograph of the site provided the inspiration for the landscape and plantings - simple and low. The only plantings to remain on -site from the overgrown mass of existing plants will be the Hosta edge and Hydrangea along Carroll Street and the hedge of Yew separating the Church and the parking area to the west. Proposed plants along the Church are low borders of hardy perennials to sit at the top of a slight berm. Plants along the southern wall of the Parish House will be white flowering, small trees to soften the bulk of the brick wall. Finally, an existing hedge of yew to the west of the Church will be extended to the area between the two buildings. A planting



Photo Courtesy Maine Historical Society1931

area at the base of the three large stained glass windows in the courtyard has been added to the final site plan. The purpose of this planting area will be to soften the view from Thomas Street into the courtyard, at the point where the Belgium block access drive meets the church wall. This new configuration is illustrated on the photo mock-up attached to this submittal.

ADA Analysis

The current application for Level III Site Plan does not include any re-use of the existing sanctuary space. The applicant intends to maintain the space for its private use until a future determination for the use of the space can be made. During the Historic Preservation approval process the applicant was asked to investigate a suitable location for a future ramp to be constructed to access the sanctuary should a public use ever be re-established. A location for that ramp system has been shown on drawing L101 in the northwest corner of the sanctuary.

Planning staff also requested that the need for ADA access to the Parish House be evaluated. The application as submitted does provide for a new walkway to the existing entrance to the parish house. This new walkway provides an acceptable ADA entrance to the office area lobby.

With respect to the residences, ADA accessibility to the residential units was evaluated and determined to be not practical due to the various level changes within the parish house itself.

Further and as noted in the text below, US Department of Justice determinations for Fair Housing does not require the conversion to residential dwelling units in the parish house be ADA accessible.

> Do the Fair Housing Act's design and construction requirements apply to the alteration or renovation of nonresidential buildings into residential buildings?
>
> No. First occupancy means a "building that has never before been used for any purpose." The conversion of a nonresidential building into a residential building through alteration or renovation does not cause the building to become a covered multifamily dwelling. This is true even if the original nonresidential building was built after March 13, 1991. This situation needs to be distinguished, however, from additions of covered multifamily dwellings (see questions 12, 13 and 14, above). See 24 C.F.R. § 100.201; Questions and Answers, Q. 4, 8 and 9, 59 Fed. Reg. at 33,364-65.
>
> Example: A warehouse built in 1994 is being rehabilitated into a small condominium residential building with two stories and a total of 12 dwelling units. This conversion of this building is not covered because at the time of its first occupancy it was not designed and constructed as a covered multifamily dwelling.



Att. E

Preliminary Traffic Analysis

Traffic in the immediate vicinity of the property should be minimal at best. The proposed 5 residential units will bring very little change to the overall traffic flows on the Western Promenade neighborhood streets. The same applies to the proposed office use. Any increase in traffic flows will not be significant and are a significant reduction in the traffic associated with the former uses of the property, which was a fully functioning church, with community outreach programs and a fully functioning daycare.

Preliminary Stormwater Analysis

As a Level III Site Plan, the proposed development requires a Stormwater Management Plan per Section 5.2.C.b of the Stormwater Management Standards found in the City of Portland Technical Manual. The Stormwater Management plan must be pursuant to the Maine DEP Chapter 500 Stormwater Management Rules for basic, general, and flooding standards. As the development is a change of use and the existing footprint of the building will be utilized, the project results in only approximately 900 square feet of additional impervious area. This additional impervious area will likely be required for parking or driveway accommodations in the existing courtyard off of Thomas Street. While this is a negligible increase in comparison to the overall impervious area associated with the footprint of the building, there are approaches that can mitigate any offsite affects. The use of grass pavers reduces impervious area and the resulting stormwater runoff that may be well suited for tight accommodations of this site while providing for additional green space. Another alternative that could be implemented is a shallow rain garden incorporated into the landscaping surrounding the proposed parking. This provides for both stormwater quantity and quality control. Either one of these approaches or a combination of both, will be adequate to address any offsite stormwater quantity or quality impacts.

Preliminary Utilities Analysis

The proposed development will utilize existing public utility services connected to common utilities in the adjacent right of ways of Thomas and Carroll Street. The existing building has water service to a 6-inch water main in Thomas Street that will be utilized. Domestic water service will be evaluated based on existing and proposed water usage and a determination will be made if the service size needs to be increase. The existing 6-inch fire service will similarly be evaluated to determine if future fire suppression demands will be adequately provided or if the service needs to be increased.

Sanitary sewer service for the existing building is 4-inch diameter leading to existing sanitary sewer main in Thomas Street. Based on the existing and proposed water usage that the project will generate, a flow analysis and wastewater capacity application will be submitted to the City.

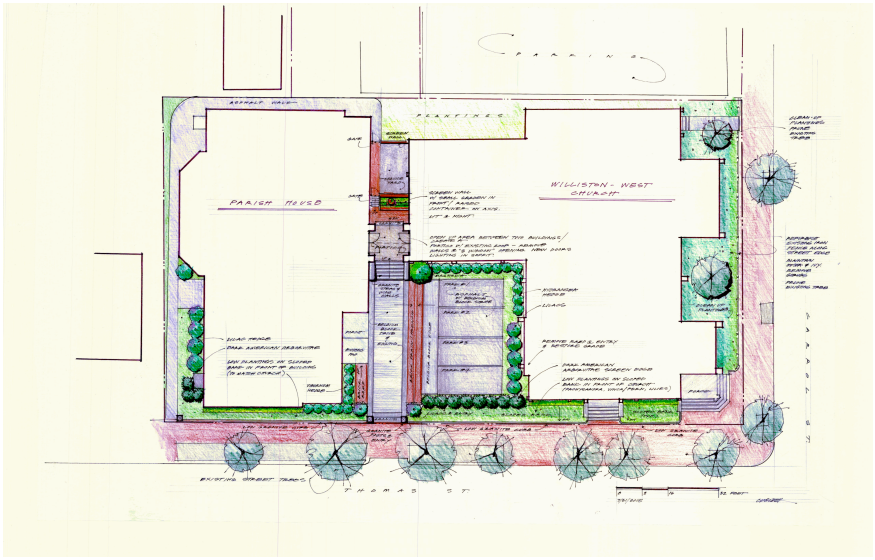
All other communication utilities that will service the proposed development are overhead and exist in Thomas and / or Carroll Streets.

Proposed Site Plan and Preliminary Landscape Plan

On the attached plans we have shown a proposed redevelopment of the principal courtyard on the property. The courtyard of the property has an existing curb cut and two in-line parking spaces. An existing entry to the Parish House is at the southwest corner of the courtyard. An old ramp and side entrance to the church sanctuary lies to the eastern corner. Several overgrown plantings surround the perimeter of the courtyard with a single tree at the center.

A preliminary site plan was developed showing a renovated courtyard with 4 proposed parking spaces and a new primary entrance to eh residential units in a renovated portico. The attached photo shows that original scheme.

We met informally with Historic Preservation Manager Deb Andrews to review this scheme and to get her preliminary feedback on it. We shared the idea of pulling cars in and to the right of the existing driveway, creating a visual corridor with an unobstructed (by car bumpers) view of the building. A hedgerow along the sidewalk to help screen the parked cars and we shared some very preliminary thoughts on how the portico could be re-imagined as a front door to the new apartments and a new entrance to the transept of the sanctuary. Four cars parked in the courtyard with proper drainage a cobblestone driveway and very minimal to no planting in front of the transept and south facade of the main sanctuary structure and finally removal of the ramp leading up to the sanctuary.



Deb was somewhat concerned with the notion that vehicles would be parked in front of the historic stained glass in the transept. A feature that Deb also would not like to see heavily screened by the hedgerow, which while screening the cars acts as a foil to the important architecture of the sanctuary.

Where this ultimately led us was to talk about the possibility of moving the curb cut to the to the opposite side of the courtyard and closer to the sanctuary. If we moved the curb cut we would then turn into the courtyard and park to the left toward the parish house. This would accomplish a number of possible positive outcomes. It provides a more dramatic and unobstructed view of the stained glass of the transept and the south face of the sanctuary. It also serves to take the focus off the portico.

We also discussed some thoughts about creating a small walk leading up to the offices, again taking some focus off the portico. Deb would ultimately hope that we could come up with some further thoughts and ideas that transforms the portico, perhaps makes a more modern statement to better connect the parish house and the sanctuary.

With that feedback from Deb it led us to redesign the courtyard and try to strike a balance for the demands for the functional re-use of the site and the concerns of Historic Preservation. This new plan builds on that feedback. With the entrance to the courtyard flipped the site access to the the courtyard is now adjacent to the sanctuary. If approved, this new location will provide for a better unobstructed view of the historic stained glass windows in the transept. The main entrance remains at the portico, but the proposed stair leading up to it has been rotated 90° to allow for closer parking to the Parish House and to increase the views line of the stained glass. New materials in the courtyard include brick pavers, cobblestones and grass pavers (if required to mitigate impervious increases). A hedgerow would still block the view of cars parked in the courtyard, but again view of the stained glass would be maintained from the new driveway.

Finally the existing entrance to the parish house would now be accessed from the sidewalk at Thomas Street. A hedgerow is proposed to screen the parking area and provides a modest but strong view corridor to the parish house entrance and the existing masonry and wood timber frame that frames the opening.

Att. F

From: "Matthew G. Winch" <matthewwinch@earthlink.net>
To: Jean Fraser <JF@portlandmaine.gov>
Date: 10/1/2015 4:43 PM
Subject: Re: Further comments Re: On-street parking, crosswalks and CMP

Hi Jean -

Sorry it took a spell to get this turned around back to you. However as we discussed earlier today, outside of some coordination on drawings there are no major staff concerns.

I will adress your comments in the same order presented.

1 - Crosswalk: We are all on the same page on leaving the crosswalk. I should note that it is not evident on the existing conditions site plan from Northeast Civil, but there are tip-down ADA curbs at both end of the Spruce Street crosswalk. Please let me know if there is a higher expectation with the existing ramping at the crosswalk

2 - Parking: We are working to remove the second curb cut and will have this as wells the other coordination items to you for Monday.

3 - CMP: At present the telephone pole off the southeast corner of the parish house provides power underground to the property. This pole also feeds 4 other properties adjacent or across the street from the parish house. When we met with CMP we did begin to discuss power upgrades to the building. We realized that there is not any 3-phase power on Thomas Street. With the load demand we anticipate we will need to provide 3-phase to the building. After a quick walk around the neighboring streets the closest location for 3-phase may be from the corner of Neal and Carroll Street. CMP is now just beginning to evaluate how to best deliver 3-phase power to the property to balance loads, engineering and cost. There is a chance we will reuse the underground entrance at the corner of the Parish House or come into the property at the corner of the sanctuary by the rear entrance on Carroll Street. SGC Engineering will indicate both location as possible service entrance (and underground vault) for future 3-phase. Once we know which option is best we will inform staff / PB.

4 - Drainage: SGC Engineering will add a general note to their drawing that all roof gutter leaders terminate and drain at the surface. Capping the underground leaders. With Heritage Roofing starting soon on the roof restoration, this may well be underway later in the autumn.

5 - Site Plan: SGC's site plan will coordinate all of the site info as you described below.

Again we plan to send you 3 updated drawings on Monday showing the above and the second curb cut removed.

Best,
Matthew

Matthew G. Winch, Architect
Garrison Consulting
41 Edgewood Ave
Portland, ME 04103
(207) 450-0750
matthewwinch@earthlink.net

Maine Licensed Architect

"every idea starts with a thought"

> On Sep 30, 2015, at 3:24 PM, Jean Fraser <JF@portlandmaine.gov> wrote:

From: Matthew G. Winch <matthewwinch@earthlink.net>
To: Jean Fraser <JF@portlandmaine.gov>
Date: 9/29/2015 4:10 PM
Subject: On-street parking, crosswalks and CMP

Hi Jean -

Following is an update on the three items we reviewed yesterday.

CMP Meeting
We had a productive initial conversation on-site with CMP. The telephone pole at the second proposed curb cut will need to be moved about 24" north (closer to Carroll Street). The guy wire overhead would be reconfigured with an extension bracket overhead and reattach to the same anchor presently in the ground. If the second curb cut is approved buy HP and PB we will proceed with CMP to initiate design and relocation of the pole.

The pole that lands adjacent to the proposed courtyard curb cut looks like it can be preserved where it is. When CMP recently put in a new 40' pole it was set about 24-30" south of Carroll Street, which looks to be out of the way of the new curb cut to the courtyard. If CMP were to relocate this pole, it would have to go pretty close to the mature street tree, which we do not favor (nor would we think the city favors). The civil engineer felt we could make clearances all work.

On-street parking
Presently today there are 7 on-street parking spaces between Carroll Street and the driveway of the abutter next to the church property. One of those space is a handicapped parking space and site between the existing Spruce Street crosswalk and the existing courtyard curb cut.

By relocating the courtyard curb cut (leaving the cross walk to Spruce) it would create an efficiency to on-street parking that would gain 1 parking space bringing the on-street total to 8. The existing 2 spaces between Carroll Street and the crosswalk to Spruce and 6 spaces between the new courtyard curb cut and the driveway of the abutter to the south of the Parish House.

By adding a second curb cut to the property it would eliminate the parking space that was gained and return the total to 7. The distance between the two curb cuts proposed for the church property would allow for 3 spaces. The distance between the second curb cut and the abutter to the south is tight, but appears to have just about 40 of width plus site line distance at each end for 2 vehicles. The spaces between the crosswalk and Carroll Street remains at 2.

Crosswalk
While on-site today for our meeting with CMP there were quite a few people using the crosswalk to Spruce, both coming and going. While removal of the crosswalk could gain 1 additional parking space, it does not seem practical given the amount of use we noted in the short period of time we were outside on site. 10:30 to 12:00. At this point in time we would not like to pursue its removal.

In conclusion. By having 2 curb cuts on the property, parking would remain at 7 spaces on street. With just one curb cut parking would increase by 1 to a total of 8 spaces on street. If the city was to decide it best to remove the crosswalk the above two scenarios would both increase by 1 parking space.

If you have any questions about any of the information above please let us know.

- Matthew

Matthew G. Winch, Architect
Garrison Consulting

GARRISON CONSULTING

Memorandum

To:	Portland Fire Dept	**Project name:**	32 Thomas Street Apartments
Date:	November 23, 2015	**From:**	Matthew Winch
Re:	Site Plan Review App	**cc**:	Fred LaMontange, Jean Fraser & file

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On behalf of 32 Thomas St LLC, please accept this supplemental information in support of our application for Site Plan Review approval. Where specific requirements can not be addressed in this memo, please refer to the drawings accompanying this submission.

1 – Name, address and telephone number of applicant:
32 Thomas Street, LLC
Professor Frank Monsour
32 Thomas Street
Portland Maine 04102
(207) 774-4060

2 - Name, address and telephone number of architect:
Garrison Consulting
Matthew Winch, Architect
41 Edgewood Ave
Portland ME 04103
(207) 450-0750

3 – Proposed use of any structures (NFPA and IBC classification):
The subject property is an existing religious assembly use. Proposed use for the property is proposed as a mixed use Office / Business Use, Residential Use in the existing Parish House structure. The religious assembly use is to remain in the primary sanctuary structure.

4 – Square footage of all structures:
There are 2 primary structures that are connected by a small 100 SF

portico. The Sanctuary is the original building on the site. It was constructed in the late 1870's. The second structure, the Parish House was constructed in 1905. The total connected footprint on the property is roughly 12,000 SF. The Sanctuary structure is one story (with a full basement below) and is about 7,250 square feet in area.

The Parish House is a 3-story structure (with a partial basement and crawl space). The existing 3 floors total about 12,150 SF of building area. After renovations the Parish House will increase to 12,780 SF of building area. An existing mezzanine between the second and third floor, to be decked over, will create additional living area for the proposed residential units.

Total building footprint:	12,000 SF
Total (existing) building area:	19,400 SF
Total proposed building area*:	20,030 SF
Sanctuary area:	7,250 SF
Parish House area (**proposed**):	12,780 SF
1st Floor Parish House (**proposed**):	4,750 SF
2nd Floor Parish House (**proposed**):	4,650 SF
3rd Floor Parish House (**proposed**):	3,380 SF

* Building area after interior renovations.

5 – Elevations of all structures:
See attached.

6 – Proposed fire protection of all structures:
The existing Parish House is to be served by a full NFPA 13 sprinkler system served off a 6" main tied to either Thomas Street or Carroll Street. Domestic and fire would be separated. We are awaiting data from Portland Water District on a capacity to serve. A preliminary review of the project by a sprinkler contractor did not reveal any immediate concerns.

At this time the Sanctuary structure is not going to be sprinklered. The parish house and sanctuary spaces will be separated by rated assemblies at the portico.

7 – Hydrant locations:
See attached drawing denoting existing hydrants adjacent to the property.

8 – Water main(s) size and location:
See attached civil drawings for water main location and sizes. There are 6" water mains on both Carroll St and Thomas St.

9 – Access to all structures (min 2-sides)
These are existing structures renovated to accept the new proposed use. Site access is as it always has been. Thomas Street, Carroll Street and the parking lot of the McClellan Schoolhouse.

10 – Code Summary:
To be furnished at a later date along with building permit app.

We appreciate your considering this information as you move towards finalizing your review of this application.

41 Edgewood Avenue • Portland, ME 04103
(207) 450-0750 • matthewwinch@earthlink.net

Att. H

Recessed ceiling downlights with symmetrical light distributions

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:

Housing: Constructed of die-cast and extruded aluminum. Housing is supplied with mounting clamps that provide a vibration proof installation in ceilings up to 1⅜" total thickness. Rough-in housing constructed of galvanized steel with through wiring box. Rough-in housing included. Die castings are marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy.

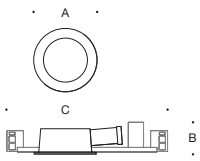
Enclosure: One piece die-cast aluminum faceplate secured to the housing with two flat head, captive, tamper resistant screws threaded into stainless steel inserts in the housing. Clear glass with pure anodized aluminum reflector. Fully gasketed with a continuous, extruded silicone gasket.

Electrical: 13W LED luminaire, 14.8 total system watts, -30°C start temperature. EldoLED 0-10V dimmable driver mounted to the junction box of the ceiling pan for easy maintenance. The LED driver provides smooth and flicker free dimming down to 0.1% and is compatible with both sink and current source controllers. Optional Dali dimmable driver available, consult factory for details. Standard LED color temperature is 3000K with an 85 CRI. Available in 4000K (85 CRI); add suffix K4 to order.
Note: Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP65.

Weight: 4.2 lbs.





Symmetrical light distribution

	Lamp	A	B	C
6873 LED	10.9W LED	7½	5	18

BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 FAX (805) 566-9474 www.bega-us.com
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KIM LIGHTING

LLF10 LED

Low Level Floodlight; Direct Lens, Symmetric Downward

revised 6/09/15 • kl_llf10led_spec.pdf

Type: Exterior recessed wall
Job: 32 Thomas Street
Catalog number:

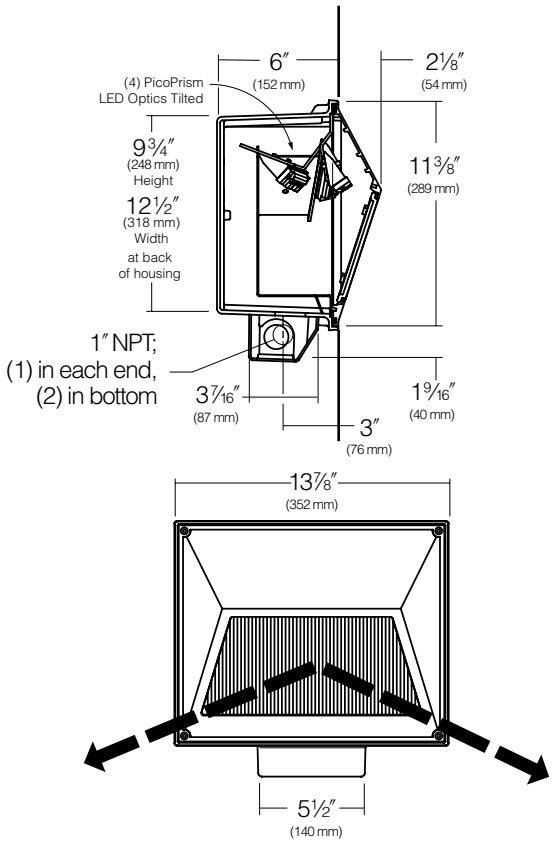
LLF10P35 / / /

Fixture | Electrical Module (See page 2) | Finish | Options (See page 3)

Approvals:

Date:

Specifications



Arrows indicate
main thrust of light distribution,
in elevation.

Housing and Junction Box: Die-cast, low-copper (<0.6% Cu) aluminum to prevent corrosion when cast in concrete. Junction box shall have an internally removable cover, a volume of 25 cu in., and four 1″ NPT conduit taps. Two taps in the bottom and one in each end, all with removable plugs. Housing and junction box further protected for permanence by a clear anodize coating. Cover furnished to keep the housing clean until the electrical components are installed.

Pour Items: Aluminum housing and junction box only, less any electrical or optical components.

Finishing Items: Electrical module, reflector and door frame. Each set of finishing items shall be in one container, clearly marked for the fixture catalog number.

Door Frame: Die-cast, low-copper (<0.6% Cu) aluminum with a fine pebbled texture on the outer surface. Trapezoidal outer contour tilts the lens 18° from vertical. Door frame secured to housing by four captive stainless steel countersunk socket head screws. (LLF10) Tempered borosilicate glass, 3/16″ min. thickness, with a smooth outer surface flush with the door frame, and vertical inside flutes. Lens is fully sealed around the perimeter with a silicone gasket and is retained by zinc plated steel clips.

Gasketing: One-piece molded silicone between the door frame and housing. A neoprene gasket provided between the junction box and housing. The entire fixture is weather tight.

Electronic Module: All electrical components are UL and CSA recognized, mounted on a single plate and factory prewired with quick-disconnect plugs. Module includes a driver, thermal control device and surge protector. Electrical and optical modules attaches to housing with stainless steel hardware, accessible by opening the lens frame. Driver is rated for -40°F starting and has a 0-10V dimming interface with a dimming range of 10-100%. 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.

Optical Module: Each precision, replaceable PicoPrism is positioned to achieve directional control toward desired task. The entire optical system fastens to the housing as a one-piece module.

Finish: Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) polyester powder coat 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.

Warranty: Kim Lighting warrants Low Level Floodlight 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.

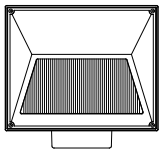
Caution: Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

HUBBELL®

Hubbell
Lighting, Inc.

KIM LIGHTING RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

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Standard Features

Fixture

Catalog number includes housing and junction box, optical system, and door frame with standard tempered glass lens.

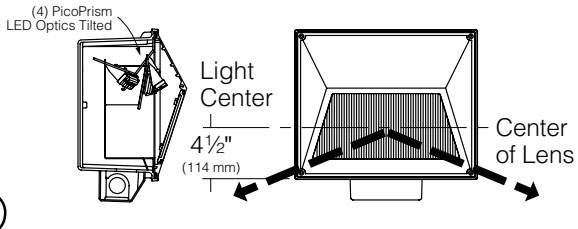
Cat. No.: **LLF10P35*[•]**

Direct Lens, Symmetric Downward Light Throw, Wall Mounted.

Arrows indicate main thrust of light distribution, in elevation.

*P35 = 350mA





Electrical Module

Fixture	Source
☐ **20L2KUV[2]**	21W 20 LEDs, 580nm - Amber color temperature
☐ **20L3KUV[2]**	21W 20 LEDs, 3000K color temperature
☐ **20L4KUV[2]**	21W 20 LEDs, 4200K color temperature
☐ **20L5KUV[2]**	21W 20 LEDs, 5100K color temperature

[2]UV = Universal Voltage from 120 to 277V with a ± 10% tolerance.

Finish

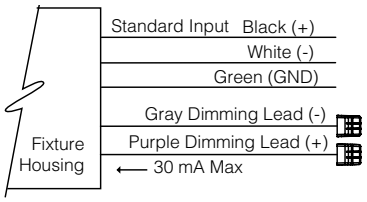
TGIC powder coat

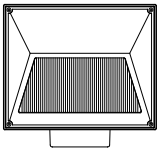
Color:	Black	Dark Bronze	Light Gray	Stealth Gray	Platinum Silver	White	Custom Color[2]
Cat. No.:	☐ **BL**	☐ **DB**	☐ **LG**	☐ **SG**	☐ **PS**	☐ **WH**	☐ **CC**

[2]Custom colors subject to additional charges, minimum quantities and extended lead times. Consult representative. Custom color description: _____

0-10V Dimming Interface

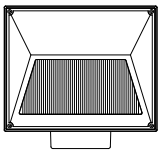
Driver has a 0-10V dimming interface with a dimming range of 10-100%. Is compatible with most control systems. Approved dimmers include Lutron Diva AVTV, Lutron Nova NFTV and NTFTV. Note: Not compatible with current sourcing dimmers. Controls compatible via Gray and Purple dimming lead.





Optional Features

Polycarbonate Lens Cat. No. ☐ **PL** ☐ **No Option**	Injection molded, identical appearance to standard tempered glass lens. **CAUTION:** Use only when vandalism is anticipated to be high. Useful life is limited due to yellowing caused by UV from sunlight.
Fusing (internal only): Cat. No. **(see chart at right)** ☐ **No Option**	High temperature fuse holders factory installed inside the fixture housing. Fuse is included. Line Volts: 120V 208V 240V 277V Cat. No.: ☐ **SF** ☐ **DF** ☐ **DF** ☐ **SF**
Emergency Battery Back-Up: Cat. No. ☐ **EM** ☐ **No Option**	EM – Internal battery pack provides 90 minutes of supplemental light at 41% of absolute lumens.
Sensor Control MicroWave: Cat. No. ☐ **SC-MW** ☐ **No Option**	SC-MW – Integrated controls for occupancy sensing with bi-level dimming. Time delay: 10 min., range of 5 m.



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	>0.90	>0.90	>0.90

Projected Lumen Maintenance		
mA	50,000 hrs	100,000 hrs
350	0.97	0.95

Electrical Driver Current		
Maximum Watts	Volts	Amps
21	120	.18
	208	.10
	240	.09
	277	.08

Absolute Lumens	
CCT	LLF10
3000K	1247
4200K	1593
5100K	1732

Lumens Per Watt	
CCT	LLF10
3000K	59.4
4200K	75.9
5100K	82.5

KIM LIGHTING

VRB1C LED Round Bollard

Single Function, Vandal-Resistant, Concrete Shaft

revision 8/10/15 • kl_vrb1cled_spec.pdf

Type:
Job:
Catalog number:

Approvals:

VRB1C	/	/	/	/
Fixture	Electrical Module	Top Cap Finish	Concrete Shaft Finish	Option

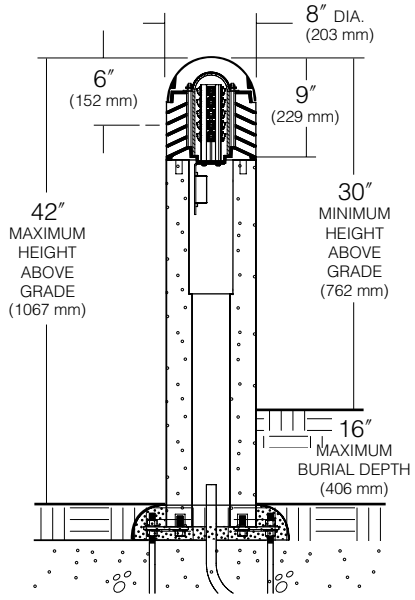
See page 2

Date:

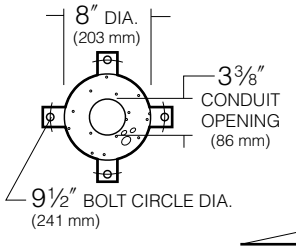
Specifications

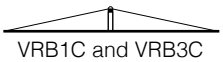
VRB-LED Models
10 - 20 Diodes

VRB1C - Single Function Luminaire
(Concrete Shaft)
Maximum weight: 115 lb

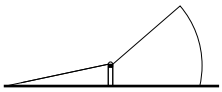


BASE PLAN
VRB
CONCRETE SHAFT





VRB1C and VRB3C



VRB2C and VRB4C

HUBBELL® Lighting

Domed Top Cap: One-piece die-cast aluminum 3⁄16″ minimum thickness, secured to louvers by concealed allen screws in keyhole slots. For relamping access, allen screws shall not require complete removal.

Louvers: Aluminum die-cast with vertical support ribs at 90° intervals. Horizontal louver blades shall have a 1¾″ depth, a 65° upward pitch and provide light source cutoff above horizontal. Louver assembly shall be secured to shaft by four internal tie rods.

Lamp Enclosure: One-piece tempered molded glass with internal flutes and full gasketing at bottom edge.

Socket: Porcelain medium base socket rated 4KV for HID and incandescent. Plastic socket for Fluorescent.

Fixture Head: Allows flow-through ventilation around and above the lamp enclosure.

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. (Type I) two 5-LED boards for a total of 10-LED. (Type III) three 5-LED boards for a total of 15-LED. (Type V) four 5-LED boards for a total of 20-LED. Available in 580nm Amber, 3000K, 4200K and 5100K color temperatures.

Anchor Bolts: Four 3⁄8″ x 10″ + 2″ zinc plated L-hooks, each with two nuts, washers and a rigid pressed board template.

Material: Cement shall conform to current specifications for "Portland Cement." ASTM C150, Type I or II. Aggregates shall meet current requirements of "Specifications for Concrete Aggregates," ASTM C33. Water shall be clean and free from deleterious amounts of silt, oil, acids, alkalies or organic materials. Wire for reinforcement shall conform to ASTM A185. Steel for lugs and plates shall conform to ASTM A36, or A283 grade D.

Surface: Medium sand-blasted with anti-graffiti sealer. Available colors are Charcoal, Brown, Natural Gray or White, integral in concrete mix.

Cure and Strength: Allows for completion of the hydration process, and result in a 28 day compressive strength of not less than 4,500 psi.

Manufacture: Fiberglass molds used to insure uniform parts. Mold parting lines may be slightly visible in finished parts.

Anchorage: Four steel mounting tabs for installation on four ½″ x 10″ + 2″ zinc electroplated L-hook anchor bolts. Each anchor bolt is supplied with two nuts, two washers, and a rigid pressed board template.

Shipment: Palletized with adequate hold-downs to prevent load movement in transit.

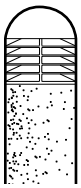
Finish: Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured, triglycidal isocyanurate (TGIC) polyester powdercoat finish. Standard colors include (BL) Black, (DB) Dark Bronze, (WH) White, (PS) Platinum Silver, (SG) Stealth Gray, (LG) Light Gray, and (CC) 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.

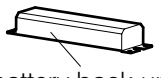
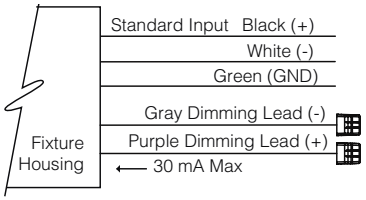
Warranty: For full warranty see http://www.hubbelllighting.com/resources/warranty.

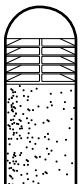
CAUTION: Fixtures must be grounded in accordance with national, state and/or local electrical codes. Failure to do so may result in serious personal injury.

KIM LIGHTING RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.



Standard and Optional Features

Fixture	Cat. No. **VRB1C** Single Function, Concrete Shaft, Domed Top
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
Finish TGIC thermoset polyester powder coat paint applied over a titanated tirconium conversion coating on fixture top cap. Concrete shaft surface color is integral in concrete mix. Available in any combination of paint and concrete finshes listed at right.	**Top Cap** Color: Black, Dark Bronze, Light Gray, Stealth Gray, Platinum Silver, White, Custom Color[1] Cat. No.: ☐ **BL** ☐ **DB** ☐ **LG** ☐ **SG** ☐ **PS** ☐ **WH** ☐ **CC** **Concrete Shaft** Color: Brown, Charcoal, Natural Gray, White Cat. No.: ☐ **BR-C** ☐ **CH-C** ☐ **NG-C** ☐ **WH-C** **NOTE:** Black and Dark Bronze colors will produce slightly less louver brightness than Light Gray or White. [1]Custom colors subject to additional charges, minimum quantities and extended lead times. Available on fixture head only. Consult representative. Custom color description: _____
Battery Back-up Cat. No. ☐ **EM** ☐ **No Option**	Internal battery pack provides 90 minutes of supplemental light at 50% of initial lamp lumens.  battery back-up
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. 



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						
	Type 1		**Type 3**		**Type 5**	
Volts - AC	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	B1 U2 G1	B1 U2 G1	B1 U2 G1
4200K	B1 U2 G1	B1 U2 G1	B1 U2 G1
5100K	B1 U2 G1	B1 U2 G1	B1 U2 G1

Absolute Lumens			
Temperature	TYPE 1	TYPE 3	TYPE 5
3000K	396	567	811
4200K	491	703	1005
5100K	515	739	1057

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.

AMETRIX™

DESCRIPTION

Cooper Lighting's LC32 combines a small scale profile with a proprietary Linear LED module that offers superior efficacy, and a diffuse uniform light distribution free from striations and hot spots. The LED module consists of a low-powered discrete LED array that runs exceptionally cool and offers aiming flexibility with three factory preset positions. Available in two light levels, this linear design tool is capable of providing more than just a decorative glow. The LC32 is ideal for cove, wall wash, and perimeter applications to visually define and/or accent architectural interior features and surfaces.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Housing gear-tray and brackets are die formed aluminum. LED module composed of extruded aluminum heat sink and fastened to housing with stainless steel hardware. Clear acrylic extruded lens offers protection from installation handling and dust. Fixture is UL Damp Location Listed.

The LC32 linear cove system features quick connect plugs to simplify installation and allow product runs up to 120 linear feet. See table below.

LED Light Engine
Fixture equipped with proprietary Cooper Lighting LED available in 2700, 3000, 3500 or 4000K with 85+ CRI. Future-proof module joined with an aluminum heat sink provides exceptional thermal management for cool operation and maximum efficacy. Discrete low-powered LED array provides soft diffuse light free from striations. LEDs comply with LM-80 lifetime testing standards and offer a life rating of 50,000 hours and 70% lumen maintenance.

Driver/Electrical
Integral high performance constant current driver for switched and dimmed applications. Each cove module is configured for a line voltage feed while providing through wiring and quick connects for continuous mounting applications.

Mounting
Ametrix LC32's small scale allows for mounting within small niches, architectural coves and valences for cove and wall wash applications. Each individual luminaire module provides two structural mounting locations.

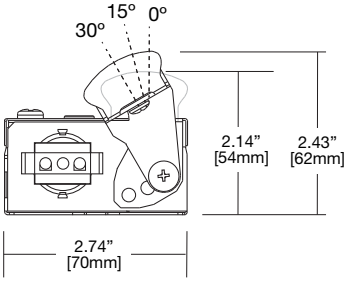
Compliance
Damp Location Listed. cULus listed for 25° C ambient environments, RoHS compliant, and compliant with IESNA LM-79. LEDs comply with LM-80 standards.

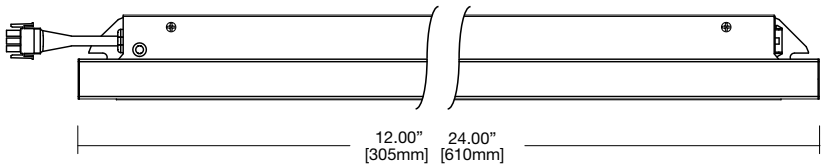
LC32 Lumen Packages (3500K CCT)

Light Level	Lumens/ft	Wattage/ft	Efficacy (LPW)
1	765	9	85
2	1330	18.5	72

LC32 Installation Run Length Specifications

Input Voltage (VAC)	Light Level	Unit Length	Max. Number of Units (Linear Feet) to be Interconnected	Max. Distance Between Interconnected Units using Jumper Cable
120 VAC	Light Level 1	12" (305mm)	60 (60')	12' (3.7m)
		24" (610mm)	60 (120')	
	Light Level 2	12" (305mm)	60 (60')	
		24" (610mm)	30 (60')	
277 VAC	Light Level 1	12" (305mm)	120 (120')	12' (3.7m)
		24" (610mm)	120 (240')	
	Light Level 2	12" (305mm)	120 (120')	
		24" (610mm)	60 (120')	







LC32
Light Level 1

LED

Architectural Cove
Integral Driver

ORDERING INFORMATION

Sample Number: LC-1-27K-1C-UNV-12-00-J1

Product
LC: LED Cove

Light Level
1: Light Level 1

Color Temperature
27K: 2700K
30K: 3000K
35K: 3500K
40K: 4000K

Number of Circuits
1: 1 Circuit

Wiring [1]
C: Standard Switched Circuit
ELV: ELV Dimming
D10: 0-10V Dimming

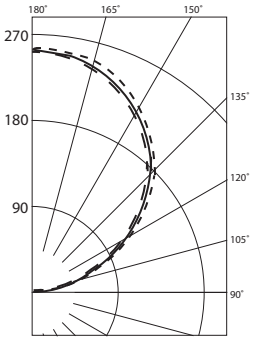
Voltage [1]
120: 120V
220: 220V
277: 277V
UNV: Universal

Module Size
12: 12" module length
24: 24" module length

Aiming
00: 0 degree Tilt
15: 15 degree Tilt
30: 30 degree Tilt

Options
J1: 1ft Jumper Cable
J3: 3ft Jumper Cable
J12: 12ft Jumper Cable

Notes: 1 Not all options available. Please consult your Cooper Lighting Representative for availability. Specifications and dimensions subject to change without notice.



LC-1-35K-1C-120-12
778 Lumens
8.9 Watts
87.4 LPW
LED ALM 2.0

Test Report: #P22480

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	96	96	96	96	82	82	82	82	56	56	56	33	33	33	11	11	11	1
1	87	82	79	75	74	71	68	65	49	47	45	28	27	26	9	9	9	0
2	79	72	66	61	67	62	57	53	42	39	37	25	23	22	8	8	7	0
3	72	63	56	51	61	54	48	44	37	34	31	22	20	18	7	7	6	0
4	65	55	48	42	56	48	42	37	33	29	26	19	17	15	6	6	5	0
5	60	49	42	36	51	42	36	31	29	25	22	17	15	13	6	5	4	0
6	55	44	36	31	47	38	31	27	26	22	19	15	13	11	5	4	4	0
7	50	39	32	27	43	34	28	23	23	19	16	14	11	10	5	4	3	0
8	46	35	28	23	40	30	24	20	21	17	14	12	10	9	4	3	3	0
9	43	32	25	20	37	27	22	18	19	15	13	11	9	7	4	3	3	0
10	40	29	22	18	34	25	19	16	17	14	11	10	8	7	3	3	2	0

Zonal Lumen Summary

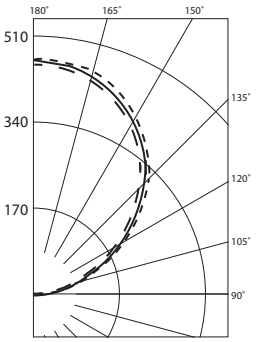
Zone	Lumens	% Lamp	% Fixture
0-90	11	N.A.	1.4
90-120	166	N.A.	21.3
90-130	290	N.A.	37.2
90-150	562	N.A.	72.2
90-180	768	N.A.	98.6
110-180	694	N.A.	89.2
0-180	778	N.A.	100

Luminance Data

Angle in Deg	0-Deg cd/sm	45-Deg cd/sm	90-Deg cd/sm
45	0	0	0
55	0	0	0
65	0	489	489
75	0	1197	1596
85	0	8292	9476

Candela

Angle	0-Deg	45-Deg	90-Deg
0	0	0	0
5	0	0	0
15	0	0	0
25	0	0	0
35	0	0	0
45	0	0	0
55	0	0	0
65	0	2	2
75	0	3	4
85	0	7	8
95	6	22	19
105	40	54	48
115	91	95	88
125	141	140	133
135	184	181	175
145	218	214	208
155	241	238	233
165	256	253	249
175	261	258	255
180	261	261	261



LC-1-35K-1C-120-24
1504 Lumens
17 Watts
88.5 LPW
LED ALM 2.0

Test Report: #P22467

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	96	96	96	96	82	82	82	82	56	56	56	33	33	33	11	11	11	1
1	87	82	79	75	74	71	68	65	48	47	45	28	27	26	9	9	9	0
2	79	72	66	61	67	61	57	53	42	39	37	25	23	22	8	8	7	0
3	72	63	56	51	61	54	48	44	37	34	31	22	20	18	7	7	6	0
4	65	55	48	42	56	48	42	37	33	29	26	19	17	15	6	6	5	0
5	60	49	42	36	51	42	36	31	29	25	22	17	15	13	6	5	4	0
6	55	44	36	31	47	38	31	27	26	22	19	15	13	11	5	4	4	0
7	50	39	32	27	43	34	28	23	23	19	16	14	11	10	5	4	3	0
8	46	35	28	23	40	30	24	20	21	17	14	12	10	9	4	3	3	0
9	43	32	25	20	37	27	22	18	19	15	13	11	9	7	4	3	3	0
10	40	29	22	18	34	25	19	16	17	14	11	10	8	7	3	3	2	0

Zonal Lumen Summary

Zone	Lumens	% Lamp	% Fixture
0-90	20	N.A.	1.3
90-120	323	N.A.	21.4
90-130	563	N.A.	37.4
90-150	1088	N.A.	72.4
90-180	1484	N.A.	98.7
110-180	1340	N.A.	89.1
0-180	1504	N.A.	100

Luminance Data

Angle in Deg	0-Deg cd/sm	45-Deg cd/sm	90-Deg cd/sm
45	0	0	0
55	0	0	0
65	0	382	382
75	0	1041	1457
85	0	8652	9270

Candela

Angle	0-Deg	45-Deg	90-Deg
0	0	0	0
5	0	0	0
15	0	0	0
25	0	0	0
35	0	0	0
45	0	0	0
55	0	0	0
65	0	3	3
75	0	5	7
85	0	14	15
95	12	43	36
105	80	105	93
115	181	185	170
125	279	271	257
135	358	349	337
145	422	412	400
155	465	458	448
165	491	487	479
175	503	500	494
180	501	501	501

Att. I

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

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

Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail:fjb@portlandmaine.gov

Date: 11/20/2015

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

Site Address: 32 Thomas Street

Chart Block Lot Number: Chart 62 Block E Lot 5

Proposed Use: 5-unit residential sub-division

Previous Use: Religious, office, day care

Existing Sanitary Flows: 12 GPD

Existing Process Flows: 0 GPD

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

Site Category		
	Commercial *(see part 4 below)*	
	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: Jean Fraser Phone: (207) 874-8728

Owner/Developer Name: 32 Thomas Street, LLC

Owner/Developer Address: 32 Thomas St, Portland, Maine 04102

Phone: (207) 774-4060 Fax: E-mail: fred.lamontange@majellagt.com

Engineering Consultant Name: SGC Engineering, Eric Williams, PE

Engineering Consultant Address: 501 County Road, Westbrook, Maine 04092

Phone: (207) 347-8100 Fax: (207) 347-8101 E-mail: ewilliams@sgceng.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: 1,314 GPD

Peaking Factor/ Peak Times:

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)*

Division of Environmental Health Maine Center for Disease Control & Prevention, Department of Health and Human Services, State of Maine Subsurface Wastewater Disposal Rules, Ch. 241, 8/3/15

(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)

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: _____

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

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

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: _____ GPD

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

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

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 below, or attached, as a separate sheet)

Notes, Comments or Calculation

Existing use: VACANT

Employees at place of employment with no showers = 12 GPD per employee
Space is presently vacant however using 12 GPD

Proposed use:
12 office staff at above rates + Residential apply 90 GPD/bedroom for each unit

Office: 12 staff x 12 GPD = 144 GPD

Residential:
Unit #1: 2 bedrooms x 90 GPD = 180 GPD
Unit #2: 3 bedrooms x 90 GPD = 270 GPD
Unit #3: 2 bedrooms x 90 GPD = 180 GPD
Unit #4: 3 bedrooms x 90 GPD = 270 GPD
Unit #5: 3 bedrooms x 90 GPD = 270 GPD

Total building: 144 GPD Office + 1,080 GPD Residential = 1,314 GPD

Reference:
Division of Environmental Health Maine Center for Disease Control & Prevention, Department of Health and Human Services, State of Maine Subsurface Wastewater Disposal Rules, Ch. 241, 8/3/15

Att. J

December 2, 2015

Jean Fraser
City of Portland Planning Department

Re: Williston Church Redevelopment
Infiltration Offset Wastewater Flow Calculation

Jean:

The Williston Church redevelopment represents 1,300 gallons per day of wastewater flow based on the proposed residential and office uses as provided in the calculations for the City of Portland Wastewater Capacity Application. It is our understand from conversations with City of Portland Engineering staff that this area of the City encounters sanitary sewer backups during heavy rainfall events as a result of the combined sewer overflow infrastructure.

As part of the redevelopment project the applicant is proposing to infiltrate stormwater runoff volume that will offset the wastewater flow from the project that contributes to the combined sewer overflow infrastructure. This will negate any increases in wastewater flow from the project. A trench drain discharging to a stone infiltration bed under the courtyard parking area is specified on the site plan. The supporting calculations are as follows:

Wastewater Flow Volume:
1,300 gals/day x 7.48 gals/cf = 174 cf

Contributing Stormwater Runoff Volume:
Including Roof & parking areas = 2,000 sf
2-yr Storm, 24 hour Storm = 3in
2,000 sf x 3in x 1ft/12in x 7.48 gal/cf = 3,740 cf

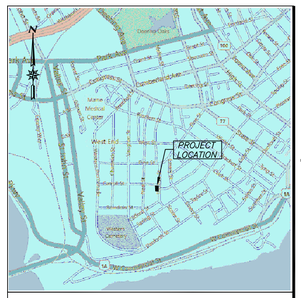
Infiltration Bed Volume:
(20'L x 15'W x 1.5'D) x 0.4voids = 180 cf

The contributing stormwater runoff volume exceeds the wastewater flows and the infiltration bed provides volume greater than the offsetting wastewater flow volume. Please contact me with any questions or comments.

Respectfully,
SGC Engineering, LLC

Eric G. Williams

Eric G. Williams, P.E.



VICINITY MAP
N.T.S.



LEGEND

●	#5 REBAR WITH PLASTIC CAP STAMPED "NCS, INC. PLS 1314" SET ON 12/22/11
◎	FOUND IRON PIPE (AS NOTED)
⊡	FOUND MONUMENT (AS NOTED)
⊙	FOUND DRILL HOLE
⊕	FOUND IRON ROD
	UTILITY POLE
	GUY WIRE ANCHOR
	FOUND DECIDUOUS TREE
	BOUNDARY LINE
	EASEMENT LINE
	EDGE OF PAVEMENT
	RIGHT–OF–WAY LINE
	ABUTTER LINE
OHU	OVERHEAD UTILITY
N/F	NOW OR FORMERLY OWNED BY
1234/567	DEED BOOK AND PAGE (CCRD)
12–3–45	TAX MAP–BLOCK–LOT
(123.45')	PARENTHESIS DENOTE RECORD DATA

NOTES

1. THE BASIS OF BEARING FOR THIS SURVEY MAGNETIC 1980 AND FROM PLAN REFERENCED IN NOTE 4.a.
2. DEED AND PLAN BOOK REFERENCES ARE TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
3. RECORD OWNERSHIP OF THE PARCELS SURVEYED CAN BE FOUND IN THE FOLLOWING DEEDS OF RECORD:
   a. DEED FROM ABBY STEEL TO WILLISTON CHURCH DATED APRIL 13, 1886 AND RECORDED IN DEED BOOK 525, PAGE 221.
   b. DEED FROM EDWARD CHASE TO WILLISTON CHURCH DATED SEPTEMBER 9, 1897 AND RECORDED IN DEED BOOK 652, PAGE 460.
4. REFERENCE IS MADE TO THE FOLLOWING PLANS:
   a. PLAN OF LAND ON NEAL AND CARROLL STREETS PORTLAND, MAINE FOR MCLELLAN SCHOOL HOUSES, BY OWEN HASKELL, INC., DATED DECEMBER 15, 1982 AND RECORDED IN PLAN BOOK 97, PAGE 1.
   b. CLIFFORD STREET CONDOMINIUM AT 15 CLIFFORD STREET PORTLAND, MAINE FOR WILLIAM HAMILL, BY OWEN HASKELL, INC, DATED SEPTEMBER 10, 1980 AND RECORDED IN PLAN BOOK 37, PAGE 1.
   c. PLAN OF REVALUATION PLAN OF PORTLAND, DATED OCTOBER 24, 1884 AND RECORDED IN PLAN BOOK 5, PAGE 62.
   d. VARIOUS RIGHT–OF–WAY PLANS OBTAINED FROM THE CITY OF PORTLAND ENGINEERING DEPARTMENT.
5. THE PARCEL SURVEYED IS IDENTIFIED ON THE CITY OF PORTLAND TAX ASSESSOR'S MAP 62, BLOCK E, PARCEL 5.
6. THE PARCEL SURVEYED IS LOCATED IN THE R–4 ZONE/DISTRICT. PORTIONS OF BULK AND SPACE REQUIREMENTS ARE AS FOLLOWS:
   MINIMUM STREET FRONTAGE.....50'
   MINIMUM FRONT YARD.....25'
   MINIMUM SIDE YARD.....10*
   MINIMUM REAR YARD.....25'
   *SIDE YARD IS DETERMINED BY HEIGHT OF STRUCTURE AND CAN INCREASE TO 16'
7. THE WIDTH AND LAYOUT OF CARROLL AND THOMAS STREETS IS 60' AND FROM PLANS REFERENCED IN NOTES 4.d
8. REFERENCE IS MADE TO THE FOLLOWING EASEMENTS OF RECORD:
   a. SUBJECT TO THE RIGHT OF CENTRAL MAINE POWER AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY TO CONSTRUCT, ERECT, REBUILD, OPERATE, MAINTAIN AND REMOVE ELECTRIC DISTRIBUTION AND COMMUNICATION LINES AS DESCRIBED IN DEED BOOK 3157, PAGE 51.
9. THE UTILITIES SHOWN ON THIS PLAN WERE FROM FIELD OBSERVATION ONLY. THERE MAY BE OTHER UTILITIES EXISTING THAT ARE NOT SHOWN. CONTACT DIG–SAFE (888)DIG–SAFE PRIOR TO ANY EXCAVATION WORK.
10. THERE IS MENTION OF AN UNDERGROUND OIL STORAGE FACILITY IN DEED BOOK 9824, PAGE 156. THE LOCATION OF THIS FACILITY IS UNKNOWN

Revision:	By:	Date:	Change:
1	ADA	12/22/11	UPDATED SET MONUMENTATION

PROJECT: 33078	DRAWING NAME: 33078.DWG
DATE: DECEMBER 13, 2011	SCALE: 1"=20'
FIELDED BY: ADA	DRAWN BY: ADA

Drawing Name and Location:
BOUNDARY SURVEY
26 THOMAS STREET, PORTLAND, MAINE

Owner:
WILLISTON CHURCH
26 THOMAS STREET, PORTLAND, MAINE

Prepared For:
MAJELLA GLOBAL TECHNOLOGY DEVELOPMENT
1200 MIDDLE STEET, PORTLAND, MAINE

SURVEYING ENGINEERING LAND PLANNING
Northeast Civil Solutions
INCORPORATED
153 US ROUTE 1, SCARBOROUGH, MAINE 04074
tel 207.883.1000 800.882.2227
fax 207.883.1001
e–mail info@northeastcivilsolutions.com

0 20' 40' 80'

STAMP AND SIGNATURE

M. JOHANN BUISMAN
MAINE L.S. No. 1314

12–22–11
DATE

IF THIS PLAN DOES NOT CONTAIN AN EMBOSSED SEAL, IT IS NOT AN ORIGINAL AND MAY BE VOID.

STATE OF MAINE M. JOHANN BUISMAN 1314 LICENSED PROFESSIONAL LAND SURVEYOR

EMBOSSED SEAL ABOVE

E:\Land Projects\33000\33078 Williston Church\dwg\33078.dwg

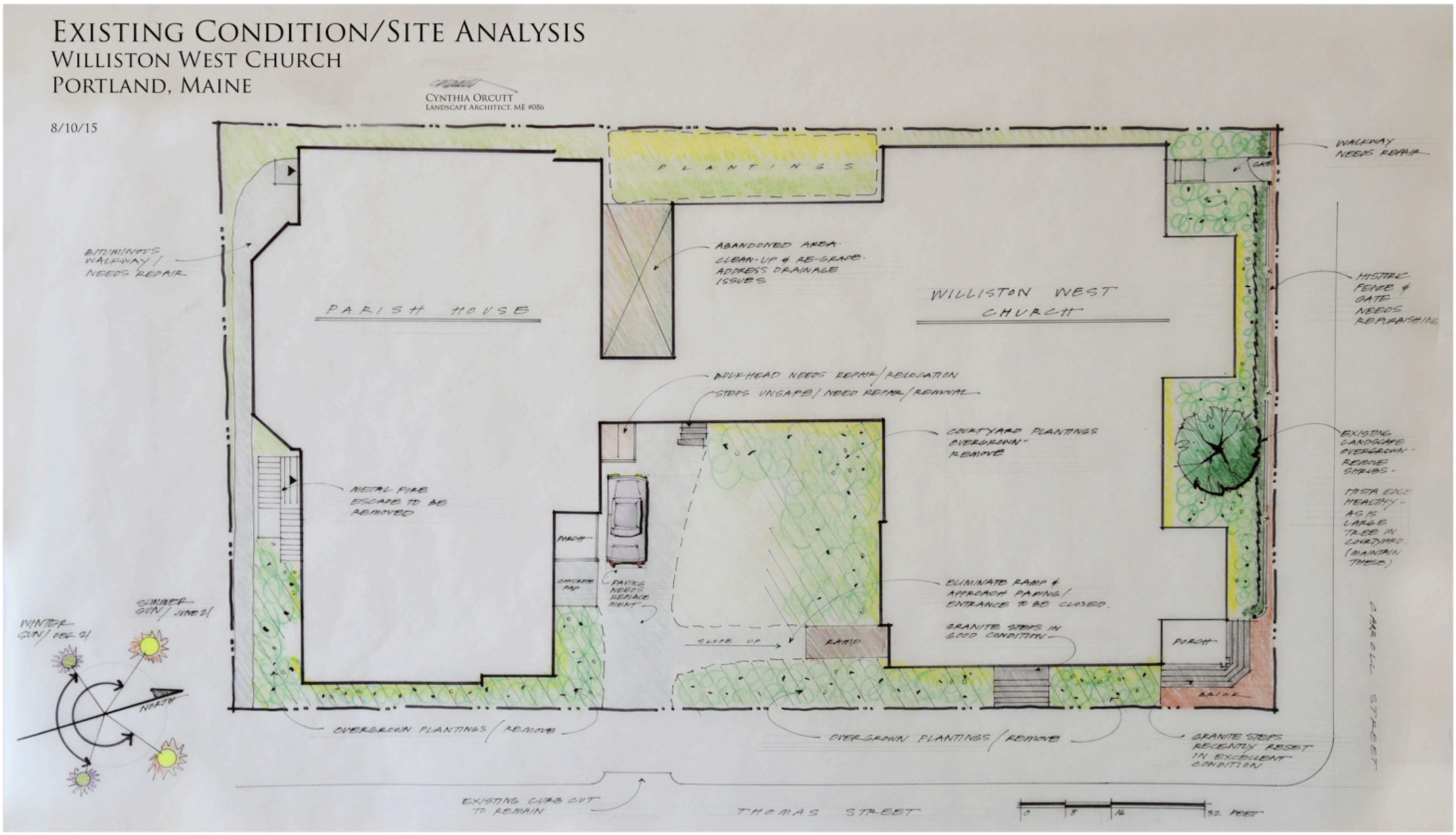
Plan 2

EXISTING CONDITION/SITE ANALYSIS

WILLISTON WEST CHURCH
PORTLAND, MAINE

CYNTHIA ORCUTT
LANDSCAPE ARCHITECT, ME #086

8/10/15



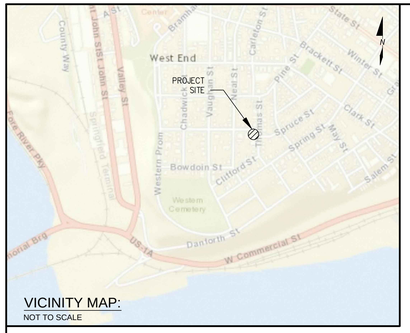
GARRISON CONSULTING
41 edgewood ave
portland, maine 04103
telephone 207 450 0750
e-mail matthewwinch@earthlink.net

ORCUTT CONSULTING
ARCHITECTURE + PLANNING + LANDSCAPE ARCHITECTURE
PO Box 314
Kingfield, Maine 04947
telephone 207 939 66518
e-mail corcutt86@gmail.com

Williston West
32 Thomas Street LLC
32 Thomas Street
Portland, Maine

date	February 1, 2012
scale	1/8" = 1'-0"
project #	2011-018
drawing title	Existing Conditions Analysis L100

Plan 3



VICINITY MAP:
NOT TO SCALE

LEGEND

EXISTING

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- ABUTTER LINE
- INTERIOR LOT LINE
- PAVEMENT
- EXISTING BUILDING
- EXISTING BUILDING
- STEEL FENCE
- OHU — OVERHEAD UTILITY
- 6"W — WATER MAIN
- W — SERVICE LINES
- G — GAS MAIN
- S — SANITARY SEWER MAIN
- SS — SANITARY SEWER SERVICE
- SEWER MANHOLE
- CATCH BASIN
- ROOF DRAIN GUTTER DOWNSPOUT
- (123.45') — PARENTHESIS DENOTE RECORD DATA
- FOUND DECIDUOUS TREE
- UTILITY POLE
- FIRE HYDRANT
- FOUND MONUMENT (AS NOTED)
- #5 REBAR WITH PLASTIC CAP STAMPED, "NCS, INC. PLS 1314" SET ON 12/22/11
- FOUND IRON PIPE (AS NOTED)
- FOUND DRILL HOLE

PROPOSED

- PAVEMENT LINE
- W — WATER LINE
- UE — UNDERGROUND ELECTRIC
- GRANITE CURBING
- BITUMINOUS PAVEMENT
- BELGIAN BLOCK PAVER
- BRICK SIDEWALK
- LIGHTING BOLLARD
- GRANITE PILLAR

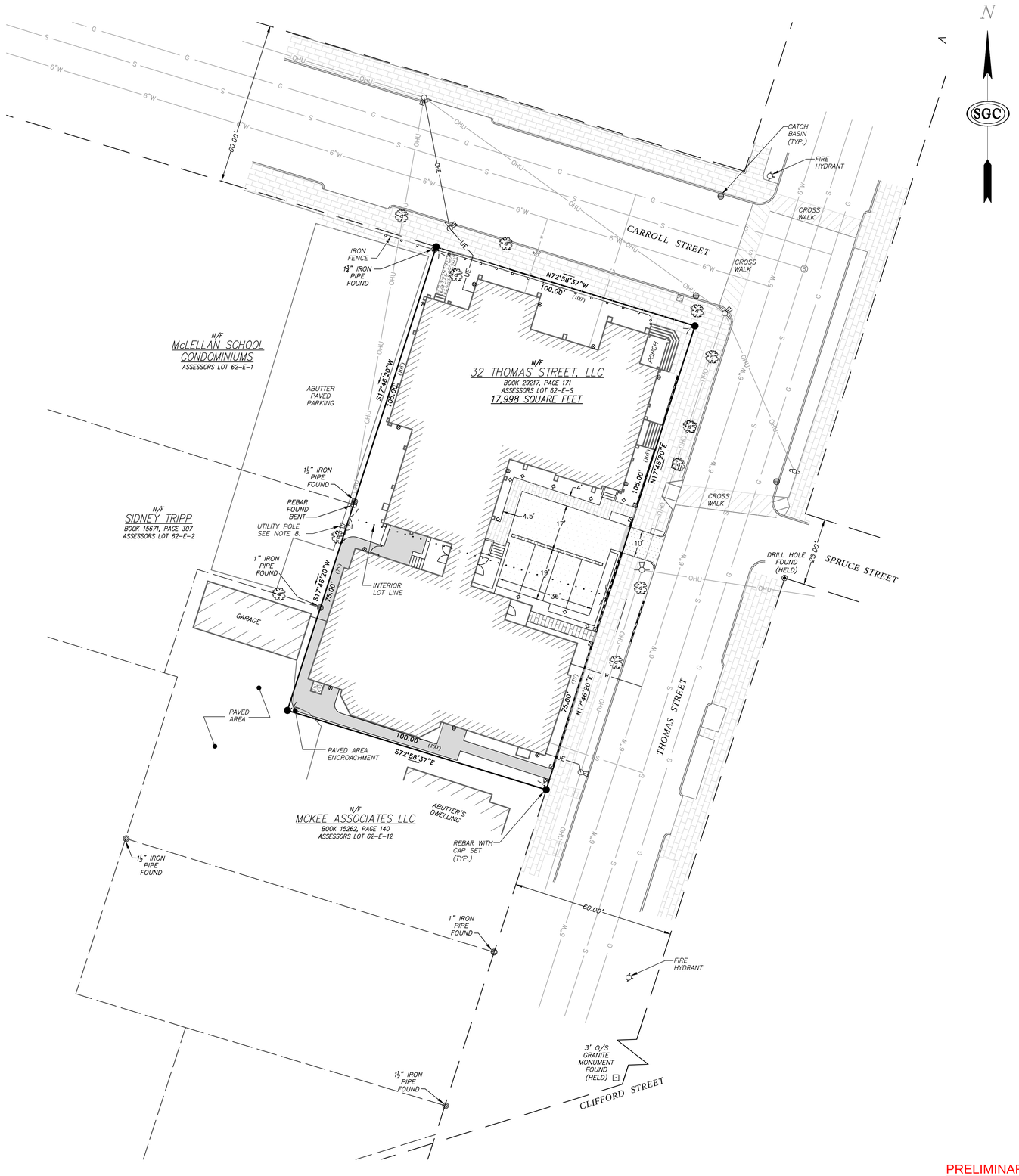
SURVEY NOTES:

1. THE BASIS OF BEARING FOR THIS SURVEY MAGNETIC 1980 AND FROM PLAN REFERENCE IN NOTE 4.A.
2. DEED AND PLAN BOOK REFERENCES ARE TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
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   C. PLAN OF REVALUATION PLAN OF PORTLAND, DATED OCTOBER 24, 1884 AND RECORDED IN PLAN BOOK 5, PAGE 62.
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MIN. STREET FRONTAGE	50	FT
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MIN. SIDE YARD	10	FT*
MIN. REAR YARD	25	FT

* SIDE YARD IS DETERMINED BY HEIGHT OF STRUCTURE AND CAN INCREASE TO 16 FT

7. THE WIDTH AND LAYOUT OF CARROLL AND THOMAS STREETS IS 60 FT AND FROM PLANS REFERENCED IN NOTES 4.D.
8. REFERENCE IS MADE TO THE FOLLOWING EASEMENTS OF RECORD:
   A. SUBJECT TO THE RIGHT OF CENTRAL MAINE POWER AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY TO CONSTRUCT, ERECT, REBUILD, OPERATE, MAINTAIN AND REMOVE ELECTRIC DISTRIBUTION AND COMMUNICATION LINES AS DESCRIBED IN DEED BOOK 3157, PAGE 51.
9. THE UTILITIES SHOWN ON THIS PLAN WERE FROM FIELD OBSERVATION ONLY. THERE MAY BE OTHER UTILITIES EXISTING THAT ARE NOT SHOWN. CONTACT DIG-SAFE (888) DIG-SAFE PRIOR TO ANY EXCAVATION WORK.
10. THERE IS MENTION OF AN UNDERGROUND OIL STORAGE FACILITY IN DEED BOOK 9824, PAGE 156. THE LOCATION OF THIS FACILITY IS UNKNOWN.
11. BOUNDARY AND EXISTING CONDITIONS SURVEY CONDUCTED BY NORTHEAST CIVIL SOLUTIONS, INC., DATED DECEMBER 13, 2011.



ZONING, BULK & SPACE REQUIREMENTS:

1. REFERENCE CONDITIONAL ZONING AGREEMENT RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS AT BOOK 29784 PAGE 123 AND R4 ZONING REQUIREMENTS.
2. PERMITTED USES:
   A. ALL USES IN THE R-4 ZONE
   B. PROFESSIONAL OFFICES, INCLUDING COMPUTER SOFTWARE PROGRAMMING AND MARKETING, AND EXCLUDING PERSONAL SERVICES, RETAIL SERVICES AND VETERINARIANS SUBJECT TO THE FOLLOWING LIMITATIONS:
      i. PROFESSIONAL OFFICES SHALL BE LOCATED ON THE FIRST FLOOR OF THE PARISH HOUSE AND SHALL OCCUPY NO MORE THAN 2,800 SF OF FLOOR AREA.
      ii. THE TOTAL NUMBER OF INDIVIDUALS WORKING IN THE PROFESSIONAL OFFICES SHALL NOT EXCEED FOURTEEN (14) NON-RESIDENT EMPLOYEES REGULARLY SCHEDULED TO OCCUPY THE PREMISES AT ANY ONE TIME;
      iii. THE BUSINESS UTILIZING THE OFFICE SPACE SHALL BE A SINGLE TENANT OFFICE USER OWNED BY OR AFFILIATED WITH THE OWNER OF THE BUILDING COMPLEX
      iv. THE OFFICE USE SHALL NOT GENERATE FREQUENT DAILY VISITATION BY CLIENTS CUSTOMERS, OR THE GENERAL PUBLIC.
      v. THE OWNER OR OPERATOR OF THE BUSINESS SHALL SECURE AND PROVIDE TO ITS EMPLOYEES ONE (1) OFF STREET PARKING SPACE FOR EACH EMPLOYEE WHO COMMUTES TO THE OFFICE BY HIS OR HER AUTOMOBILE.
3. THIS PROJECT INCLUDES AN OFFICE USE ON THE FIRST FLOOR OF THE PARISH HOUSE THAT OCCUPIES APPROXIMATELY 2,500 SF OF FLOOR AREA. THE UNDERLYING DIMENSIONAL REQUIREMENTS FOR THE UNDERLYING R4 ZONE APPLY BUT FOR THE FOLLOWING MODIFICATIONS AS PER THE CONDITIONAL REZONING AGREEMENT. THESE INDIVIDUAL REQUIREMENTS ARE LISTED BELOW ALONG WITH THE ESTABLISHED COMPLIANCE TO THOSE REQUIREMENTS.
   A. MINIMUM LOT SIZE FOR PLACES OF ASSEMBLY AND PROFESSIONAL OFFICE USES: COMBINED 17,500 SF. THE LOT SIZE OF THE SUBJECT PROPERTY IS 17,998SF AND IS DOCUMENTED AS SUCH ON THE BOUNDARY SURVEY BY NORTHEAST CIVIL SOLUTIONS DATED DECEMBER 13, 2011.
   B. MINIMUM YARD DIMENSIONS
      i. FRONT YARD: 3 FEET. THE EXISTING FRONT YARD OF PARISH HOUSE IS 4'-0", THE SANCTUARY IS 6'-10" AT THOMAS STREET AND 6'-9" AT CARROLL ST.
      ii. REAR YARD: 3 FEET. THE EXISTING STRUCTURE OF SANCTUARY IS 2'-9" AND AT THE EXISTING STRUCTURE AT THE REAR OF THE PARISH HOUSE IS 3'-9".
      iii. SIDE YARD: 4 FEET. THE SIDE OF THE EXISTING PARISH HOUSE STRUCTURE AT THE SIDE YARD IS 5'-0".
      iv. SIDE YARD ON SIDE STREETS: 8 FEET.
   C. MAXIMUM LOT COVERAGE: 90%. THE EXISTING FOOTPRINT OF THE STRUCTURES ON THE PROPERTY IS APPROXIMATELY 12,000 SF PROVIDING A LOT COVERAGE OF 67%.
   D. MAXIMUM STRUCTURE HEIGHT (SANCTUARY): 37 FEET. THE EXISTING HEIGHT OF THE SANCTUARY IS APPROXIMATELY 37 FEET.
   E. MAXIMUM STRUCTURE HEIGHT (PARISH HOUSE): 47 FEET. THE EXISTING HEIGHT OF THE PARISH HOUSE IS APPROXIMATELY 47 FEET.
   F. MAXIMUM STRUCTURE HEIGHT (BELL TOWER): 70 FEET. THE EXISTING HEIGHT OF THE BELL TOWER IS APPROXIMATELY 70 FEET.
   G. MAXIMUM FLOOR AREA FOR PLACES OF ASSEMBLY: 6,000SF. THIS PROJECT DOES NOT INCLUDE ANY PROVISION OR CONSIDERATION FOR THE USE OF THE SANCTUARY AS A COMMUNITY HALL AT THIS TIME.
   H. RESIDENTIAL DWELLINGS WITHIN THE EXISTING STRUCTURES SHALL BE GOVERNED BY THE PROVISIONS OF SECTION 14-103(A)(2) OF THE UNDERLYING R-4 ZONE. DENSITY CALCULATIONS FOR RESIDENTIAL USE SHALL BE BASED ON THE LOT SIZE OF THE PARCEL WITHOUT LAND AREA DEDUCTIONS FOR OTHER NON-RESIDENTIAL USES ON THE SITE. THIS PROJECT PROPOSES 5 RESIDENTIAL DWELLING UNITS WITHIN THE EXISTING STRUCTURE OF THE PARISH HOUSE. THE R-4 ZONE REQUIRES A MINIMUM LOT AREA OF 3,000SF PER UNIT AND A MINIMUM FLOOR AREA OF 700SF PER UNIT. THE PROPOSAL OF 5 UNITS REQUIRES 15,000SF OF LAND AREA. THE EXISTING LAND AREA OF THE SITE IS 17,998 SF. THE SMALLEST OF THE 5 PROPOSED UNITS IS APPROXIMATELY 1,100 SF.
   I. THE CONDITIONAL REZONING AGREEMENT PROHIBITS THE INCREASE IN VOLUME OR FOOTPRINT OF EITHER THE PARISH HOUSE OR THE SANCTUARY. THE SUBMISSION INCLUDES THE RENOVATION OF THE EXISTING PORTICO CONNECTOR BETWEEN THE PARISH HOUSE AND THE TRANSEPT OF THE SANCTUARY AS THE MAIN ENTRANCE TO THE RESIDENCES IN THE PARISH HOUSE. THESE MODIFICATIONS WILL NOT INCREASE THE FOOTPRINT OR THE VOLUME OF THE PRIMARY STRUCTURES ON THE PROPERTY.
   J. THE CONDITIONAL REZONING AGREEMENT INCLUDED A REHABILITATIONS SCHEDULE. THAT WORK HAS COMMENCED AND IS UNDERWAY AS NOTED. THIS PROJECT DOES NOT EXTEND TO SEEK A CERTIFICATE OF OCCUPANCY FOR THE OFFICE USE IN THE PARISH HOUSE UNTIL ALL OF THE WORK ON THE REHABILITATION SCHEDULE HAS BEEN COMPLETED.
4. THE 4 ON-SITE PARKING SPACES ARE DEDICATED FOR RESIDENTIAL USE. ONE PARKING SPACE SHALL BE DEDICATED FOR UNITS 2, 3, 4 & 5.

UNIT SQUARE FOOTAGE TABLE:

UNIT #	DESCRIPTION	SQUARE FOOTAGE (SF)
1	GROUND FLOOR CARETAKERS	1,115
2	OVERLOOKING THOMAS STREET	2,161
3	CENTER OF BUILDING	1,768
4	SOUTHWEST CORNER	1,627
5	REAR NORTHWEST CORNER	1,507

PLANNING BOARD CONDITIONS OF APPROVAL:

1.

APPROVED BY CITY OF PORTLAND PLANNING BOARD

NAME	DATE

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS:

NO.	DATE	
0	12/2/2015	CITY OF PORTLAND SUBMITTAL

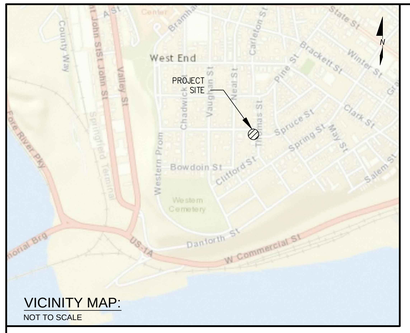
SGC ENGINEERING, LLC
• Civil Design & Survey Engineering
• Environmental & Regulatory Permitting
• Electrical Power Systems Engineering
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501 County Road, Westbrook, Maine 04092, Tel: 207-317-4101, Fax: 207-347-4101
40 Harlow Street, Suite 2, Bangor, Maine 04401, Tel: 207-947-8189, Fax: 207-317-6018
14 School Street, Suite 203-5, Bristol, VT 05443, Tel: 802-735-4256
2700 Post Oak Boulevard, Houston, TX 77056

RECORD OWNER:
MAJELLA GLOBAL TECHNOLOGY DEVELOPMENT
1200 MIDDLE STREET
PORTLAND, MAINE

DRAWN: TDD | PROJECT: 1309001
CHECK: EGW | FILE: 1309001_RECORDING PLAT.DWG
DATE: 12/02/2015 | SCALE: 1" = 20'
DESIGN: TDD

TITLE:
RECORDING PLAT
WILLISTON CHURCH
26 THOMAS STREET
PORTLAND, MAINE

SHEET:
1



VICINITY MAP:
NOT TO SCALE

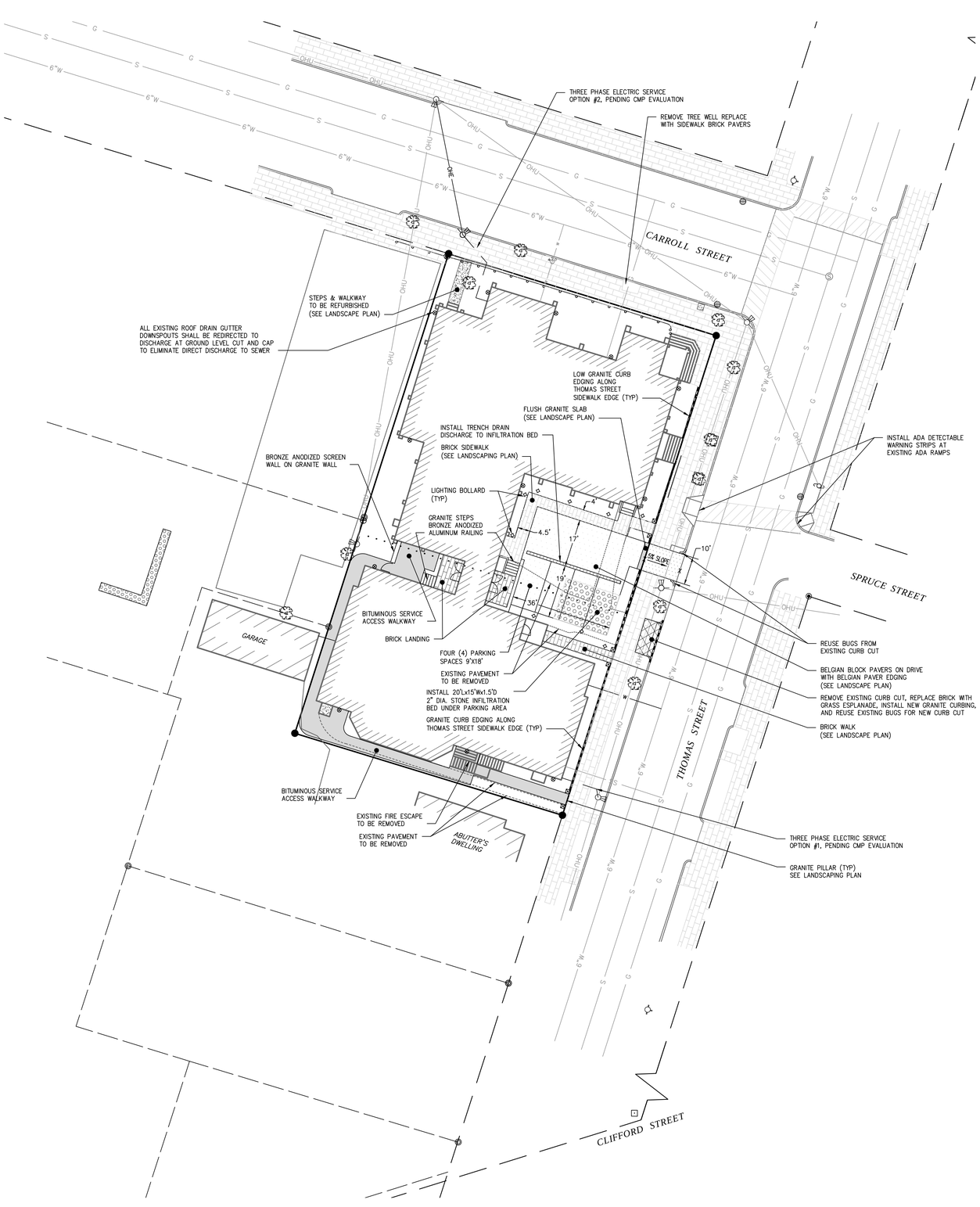
LEGEND

EXISTING

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- ABUTTER LINE
- INTERIOR LOT LINE
- PAVEMENT
- EXISTING BUILDING
- EXISTING BUILDING
- STEEL FENCE
- OHU — OVERHEAD UTILITY
- 6"W — WATER MAIN
- W — SERVICE LINES
- G — GAS MAIN
- S — SANITARY SEWER MAIN
- SS — SANITARY SEWER SERVICE
- SEWER MANHOLE
- CATCH BASIN
- ROOF DRAIN GUTTER DOWNSPOUT
- N/F — NOW OR FORMERLY OWNED BY
- 15671/307 — DEED BOOK AND PAGE (CCRD)
- 62-E-2 — TAX MAP-BLOCK-LOT
- (123.45') — PARENTHESIS DENOTE RECORD DATA
- FOUND DECIDUOUS TREE
- UTILITY POLE
- FIRE HYDRANT
- FOUND MONUMENT (AS NOTED)
- #5 REBAR WITH PLASTIC CAP STAMPED, "NCS, INC. PLS 1314" SET ON 12/22/11
- FOUND IRON PIPE (AS NOTED)
- FOUND DRILL HOLE

PROPOSED

- PAVEMENT LINE
- CONCRETE LINE
- W — WATER LINE
- UE — UNDERGROUND ELECTRIC
- GRANITE CURBING
- BITUMINOUS PAVEMENT
- BELGIAN BLOCK PAVER
- BRICK SIDEWALK
- LIGHTING BOLLARD
- GRANITE PILLAR



GENERAL SITE NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "DIG-SAFE" AND LOCAL UTILITY COMPANIES AT LEAST 3 BUSINESS DAYS, BUT NOT MORE THAN 30 CALENDAR DAYS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION, OR AS OTHERWISE REQUIRED BY MAINE STATE LAW.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL MEANS, METHODS AND TECHNIQUES EMPLOYED TO PERFORM THE WORK SHOWN ON THESE PLANS.
3. ALL WORK SHALL COMPLY WITH ALL LOCAL, STATE AND FEDERAL SAFETY REGULATIONS.
4. CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES WITH THE RESPECTIVE COMPANY PRIOR TO THE START OF CONSTRUCTION. IF ANY DISCREPANCIES OR CONFLICTS ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER PRIOR TO PROCEEDING.
5. ALL UTILITY FACILITIES SHALL BE ADJUSTED BY THE RESPECTIVE UTILITIES UNLESS OTHERWISE NOTED. UTILITY POLE RELOCATION SHALL BE COORDINATED WITH CMP.
6. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THE WORK SHOWN ON THESE PLANS PRIOR TO CONSTRUCTION.
7. NO BLASTING WILL BE ALLOWED WITHIN 500 FT OF ANY UTILITY WITHOUT THE NOTIFICATION AND APPROVAL OF CMP OR THE APPROPRIATE UTILITY COMPANY. NO LEDGE BLASTING WILL BE PERMITTED WITHIN A UTILITY COMPANY EASEMENT UNTIL WRITTEN APPROVAL FROM THE UTILITY IS GIVEN.
8. PAVEMENT CUTS SHALL BE SAW CUT TO RESULT IN CLEAN EDGES. A TACK COAT SHALL BE APPLIED ALONG THE CUT EDGES AND NEW PAVEMENT BUTTED TO IT, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE TO RECLAIM OR PROPERLY DISPOSE OF REMOVED BITUMINOUS MATERIALS.
10. ROADWAY MATERIALS SHALL BE AS REFERENCED FROM "STATE OF MAINE, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DECEMBER 2002" CHAPTER 401.02 MATERIALS, EXCEPT AS OTHERWISE NOTED.
11. ALL WORK SHALL BE IN CONFORMANCE WITH THE CITY OF PORTLAND AND RESPECTIVE UTILITY COMPANY STANDARDS.
12. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED & MAINTAINED IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES, MARCH 2003 AND AS OTHERWISE SPECIFIED OR INDICATED ON DRAWINGS.
13. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAG PERSONNEL OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY IN ACCORDANCE WITH THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL CONSTRUCTION ZONE TRAFFIC CONTROL.
14. SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. THE ENGINEER IS NOT RESPONSIBLE FOR SAFETY IN, ON, OR ABOUT THE PROJECT SITE, NOR FOR COMPLIANCE BY THE APPROPRIATE PARTY WITH ANY REGULATIONS RELATING TO JOB SITE SAFETY.
15. THE CONTRACTOR SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO SIGNIFICANTLY REDUCE ANY POTENTIAL POLLUTION CAUSED BY HIS ACTIVITIES, INCLUDING VEHICLE FUELING, STORAGE OF FERTILIZERS OR CHEMICALS, ETC. THE CONTRACTOR SHALL HAVE IDENTIFIED PROCEDURES FOR HANDLING POTENTIAL POLLUTANTS AND HAVE IDENTIFIED SPILL PREVENTION AND RESPONSE PROCEDURES PRIOR TO ANY ACTIVITIES AT THE PROJECT SITE.
16. THE CONTRACTOR SHALL NOT SCALE DRAWINGS FOR CONSTRUCTION PURPOSES. WRITTEN DIMENSIONS SHALL PREVAIL. ANY MISSING DIMENSIONS OR DISCREPANCIES IN PLANS, FIELD STAKING, OR PHYSICAL FEATURES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. IF THE CONTRACTOR PROCEEDS WITH THE WORK WITHOUT NOTIFYING THE ENGINEER, HE DOES SO AT HIS OWN RISK.
17. THE CONTRACTOR SHALL KEEP TWO SETS OF CONTRACT DRAWINGS MARKED UP TO FULLY INDICATE AS-BUILT CONDITIONS. THE DRAWINGS SHALL BE PROVIDED TO SGC ENGINEERING, LLC AND THE OWNER UPON COMPLETION OF WORK. WHERE PRACTICAL THE CONTRACTOR SHALL PROVIDE AT LEAST TWO TIES FROM PHYSICAL MONUMENTS TO ALL FITTINGS, VALVES, MANHOLES, AND THE END OF ALL SERVICE LINES.
18. THE CONTRACTOR SHALL MAINTAIN EXISTING DRAINAGE CHANNELS AND FACILITIES DURING CONSTRUCTION AS NECESSARY TO PROTECT ROADS AND PROPERTY.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING AND RESETTING ALL EXISTING PROPERTY MONUMENTATION DISTURBED BY HIS OPERATIONS. THIS WORK SHALL BE DONE BY A LAND SURVEYOR REGISTERED IN THE STATE OF MAINE, AT NO ADDITIONAL COST TO THE OWNER.
20. ALL AREAS THAT ARE EXCAVATED, FILLED, OR OTHERWISE DISTURBED BY THE CONTRACTOR SHALL BE LOAMED, GRADED, LIMED, FERTILIZED, SEEDED AND MULCHED, UNLESS OTHERWISE NOTED. THE TOP 4 INCHES OF SOIL SHALL BE TOPSOIL.
21. CONTRACTOR SHALL CONTROL DUST ON THE CONSTRUCTION SITE TO A REASONABLE LIMIT, TO THE SATISFACTION OF THE TOWN AND ENGINEER.
22. CONTRACTOR SHALL NOT TRACK OR SPILL EARTH, DEBRIS, OR OTHER CONSTRUCTION MATERIAL ON PUBLIC OR PRIVATE STREETS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMMEDIATE ASSOCIATED CLEAN UP.
23. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL DEBRIS AND EXCESS EXCAVATED MATERIAL FROM WITHIN THE CONSTRUCTION LIMIT OF WORK, TO A SUITABLE OFF SITE LOCATION PROVIDED BY THE CONTRACTOR, IN COMPLIANCE WITH STATE AND LOCAL REGULATIONS.
24. CONTRACTOR SHALL REMOVE AND REPLACE, OR REPAIR ALL PAVEMENT, SIDEWALK AND OTHER ITEMS DAMAGED BY HIS CONSTRUCTION ACTIVITIES TO AT LEAST THEIR ORIGINAL CONDITION, PER CITY OF PORTLAND TECHNICAL STANDARDS AND TO THE SATISFACTION OF THE CITY AND ENGINEER.
25. ALL EXISTING STREET TREES TO REMAIN. TREES SHALL BE PROTECTED DURING CONSTRUCTION AND REPLACED IF DAMAGED AND DEEMED TO BE UNSAFE FOLLOWING CONSTRUCTION.

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS:

NO.	DATE	
0	12/2/2015	CITY OF PORTLAND SUBMITTAL

SGC ENGINEERING, LLC
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• Environmental & Regulatory Permitting
• Electrical Power Systems Engineering
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14 School Street, Suite 203-5, Bristol, VT 05443, Tel: 802-735-0258
Galleria Tower I, Suite 2475, 2700 Post Oak Boulevard, Houston, TX 77056

STATE OF MAINE — ERIC G. WILLIAMS — No. 9859 — REGISTERED PROFESSIONAL ENGINEER

RECORD OWNER:
MAJELLA GLOBAL TECHNOLOGY DEVELOPMENT
1200 MIDDLE STREET
PORTLAND, MAINE

PROJECT: 1309001
FILE: 1309001_SITE PLAN.DWG
DRAWN: TDD
CHECK: EGW
DATE: 12/2/2015
DESIGN: TDD

TITLE:
SITE PLAN
WILLISTON CHURCH
26 THOMAS STREET
PORTLAND, MAINE

SCALE: 1" = 20'
40 20 0 10 20

SHEET:
1



Final Site Plan

Williston West - 32 Thomas Street
Portland, Maine

December 2, 2015

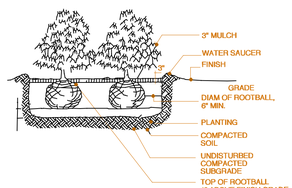
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Orcutt Consulting
Architecture • Planning • Landscape Architecture
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e-mail: orcutt@verizon.net

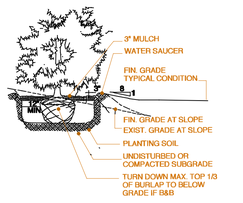
Plan 6

Qty.	Item	Size	Root	Spcng	Remarks
	TREES and SHRUBS				
1	Magnolia stellata 'Royal Star' Royal Star Magnolia	2" - 2 1/2" caliper	B&B		Specimen tree - symmetrical full branching
34	Hydrangea paniculata 'Limelight' Limelight Hardy Hydrangea	4'-5' ht.	B&B	5' oc	Or approved equivalent hybrid Hydrangea
23	Taxus x media 'Hicksii' Hicks Yew	3'-3 1/2' ht.	B&B	3' oc	Matched shrubs
36	Taxus x Media 'Brownii' Brown's Yew	18"-24" sp	B&B or potted	30" oc	
9	Hosta Krossa Regal	18"-24" sp	B&B or potted	36" oc	
	PERENNIALS				
136	Hemerocallis spp. 'Stella d'Oro' Stella de Oro Daylilly	1 fan div blooming size	min #1 cont.	18" OC triangulated	Plant in front row of all borders - two rows triangulated
76	Matteuccia struthiopteris Ostrich Fern	Min 15-18"	min #1 cont.	24" OC triangulated	Plant in back row of all borders facing Thomas St- two rows triang.
30	Physotegia virginiana Obediant Plant	Min 15-18"	min #5/P5 cont.	24" OC triangulated	Plant in back row of courtyard border - two rows triang.
16	Veronica spicata 'Icicle' Spiked Speedwell	Min 15-18"	min #5/P5 cont.	18" OC	Plant between Daylilly and Obedient Plant in courtyard border
	MISC				
	Shredded Pine Bark Mulch				3" depth
	Seed & Mulch				Seed areas disturbed by construction

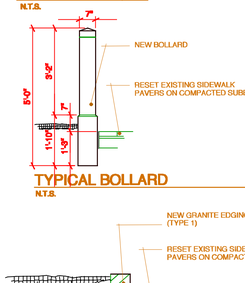
Planting List



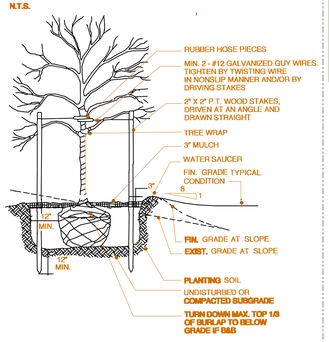
SHRUB PLANTING
N.T.S.

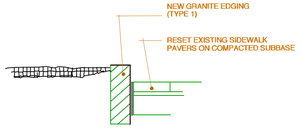


EVERGREEN SHRUB PLANTING
N.T.S.



TYPICAL BOLLARD
N.T.S.





TYPICAL GRANITE EDGE
N.T.S.

DECIDUOUS TREE PLANTING
N.T.S.

Hydrangea

Hicks or Browns Yew

Existing coniferous tree

New site lighting
KIM Bollard

Perennials - Black Eyed Susans, Iris', Daylilies, yellow Hemerocallis spp. 'Stella d'Oro'

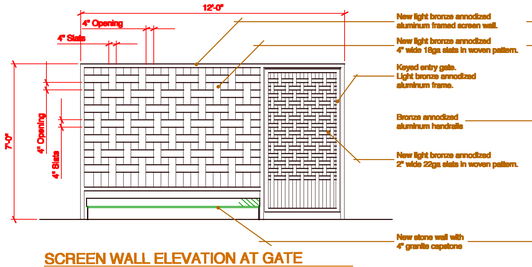
Existing Street Tree

Sedum

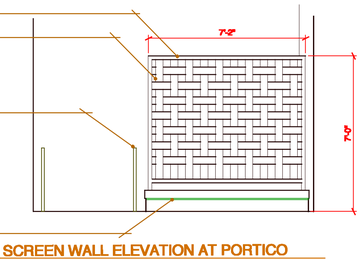
Hydrangea

Building entrances

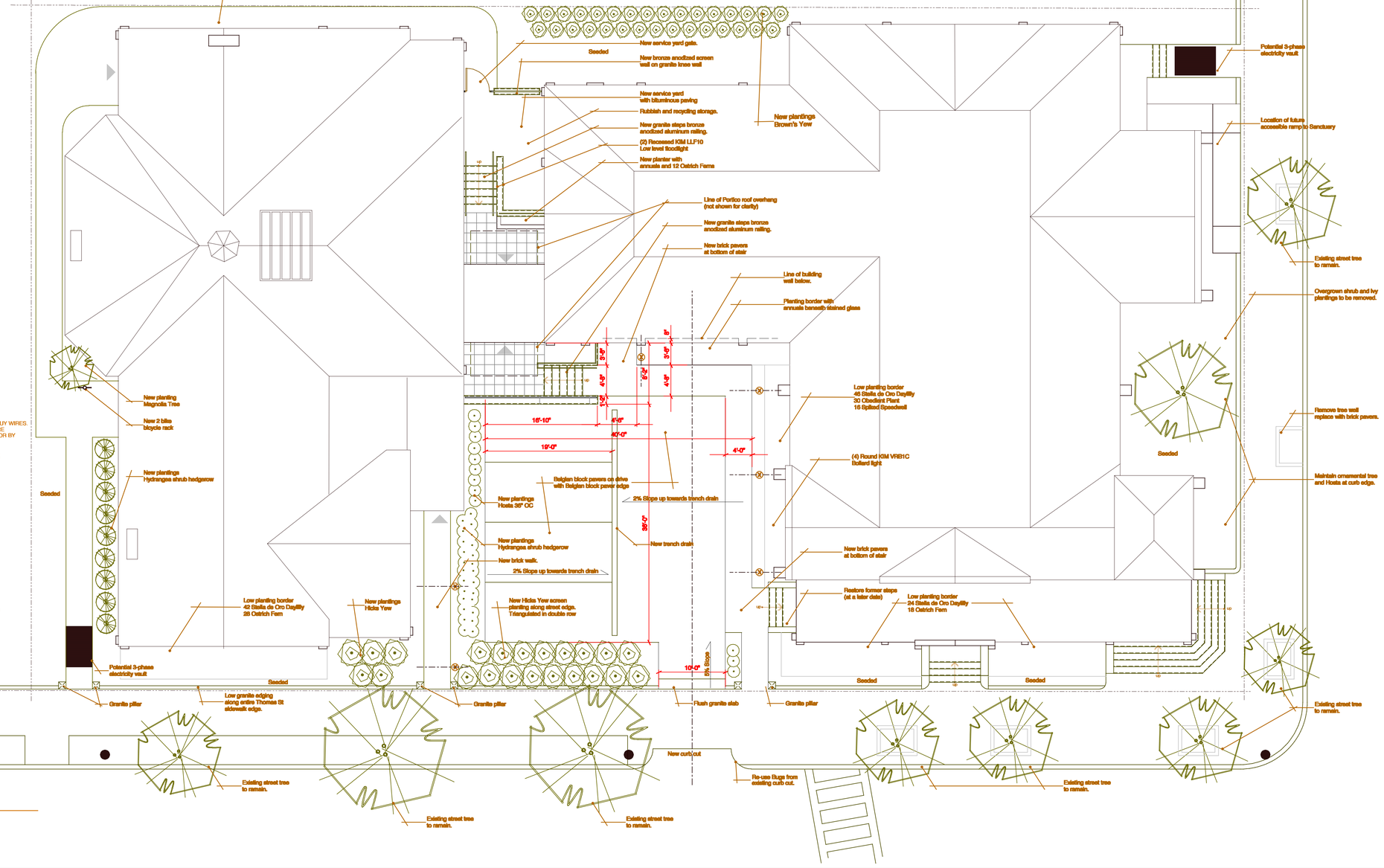
Project Key



SCREEN WALL ELEVATION AT GATE
N.T.S.



SCREEN WALL ELEVATION AT PORTICO



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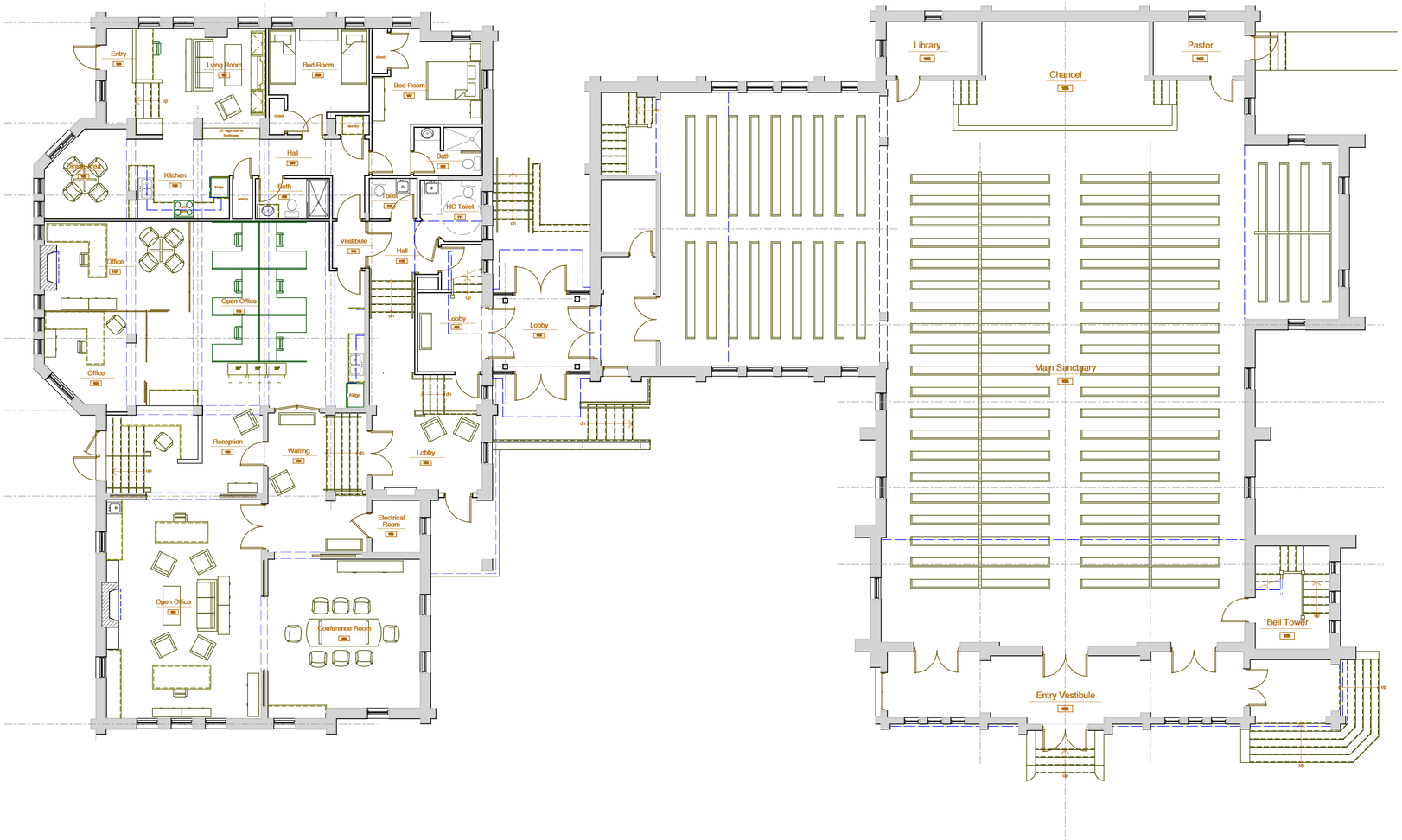
ORCUTT CONSULTING
ARCHITECTURE + PLANNING + LANDSCAPE ARCHITECTURE
PO Box 314
Kingfield, Maine 04947
telephone 207 939 66518
e-mail corcutt86@gmail.com

project name
32 Thomas Street Apartments

project location
32 Thomas Street
Portland Maine 04101

Revisions	date

date: November 23, 2015
scale: 1/8" = 1'-0"
project #: 2011-018
drawing title: Landscape & Planting Plan
drawing number: L101



10 Ground Floor Plan

0 4 12 24

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portland, maine 04103
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e-mail matthewwinch@earthlink.net

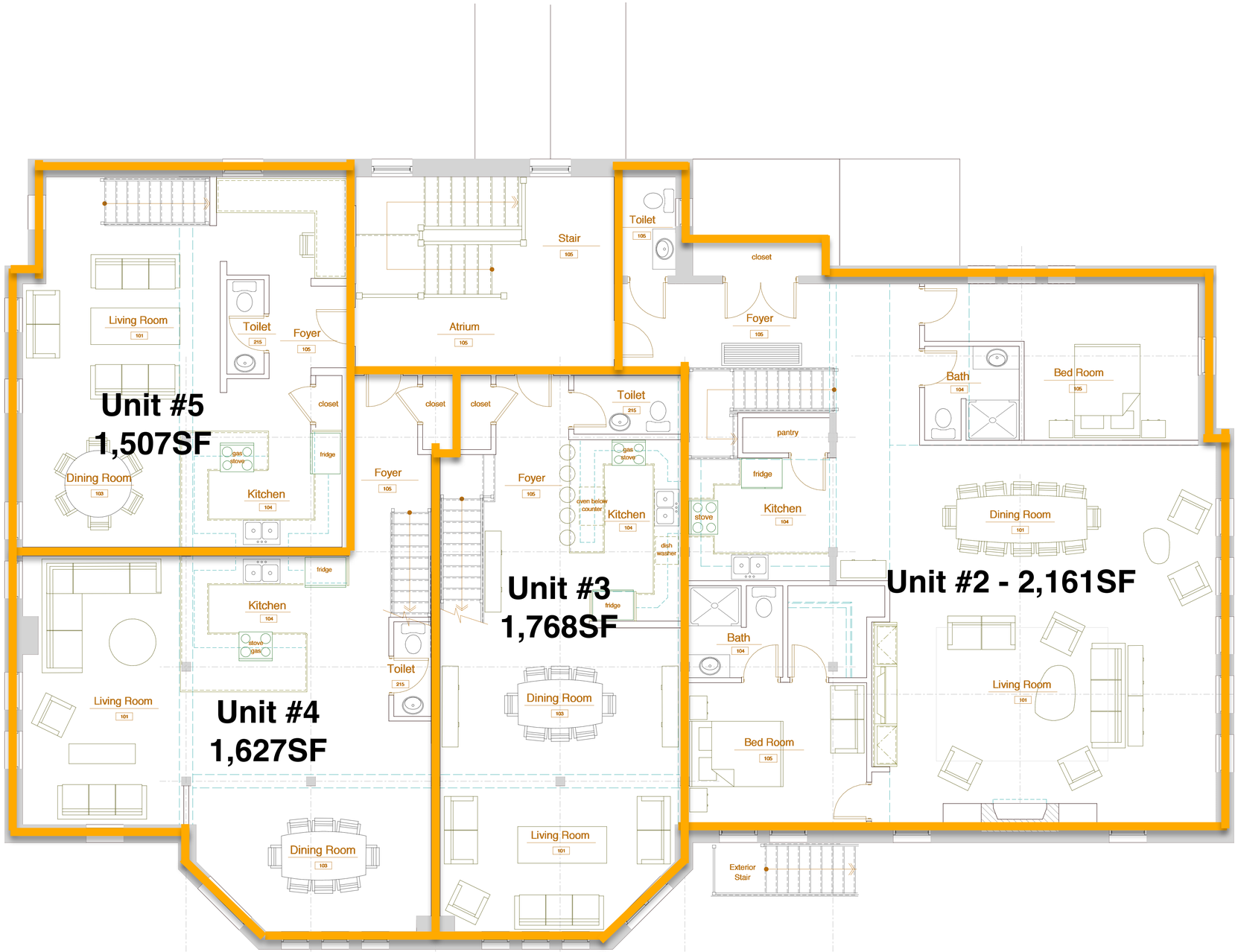
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ARCHITECTURE + PLANNING + LANDSCAPE ARCHITECTURE
PO Box 314
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project name
32 Thomas Street Apartments

project location
32 Thomas Street
Portland Maine 04101

Revisions	date

date November 30, 2015
scale 1/8" = 1'-0"
project # 2011-018
drawing title Ground Floor Sanctuary and Parish House Plan
drawing number A101



0 2 6 12 Graphic Scale

GARRISON CONSULTING

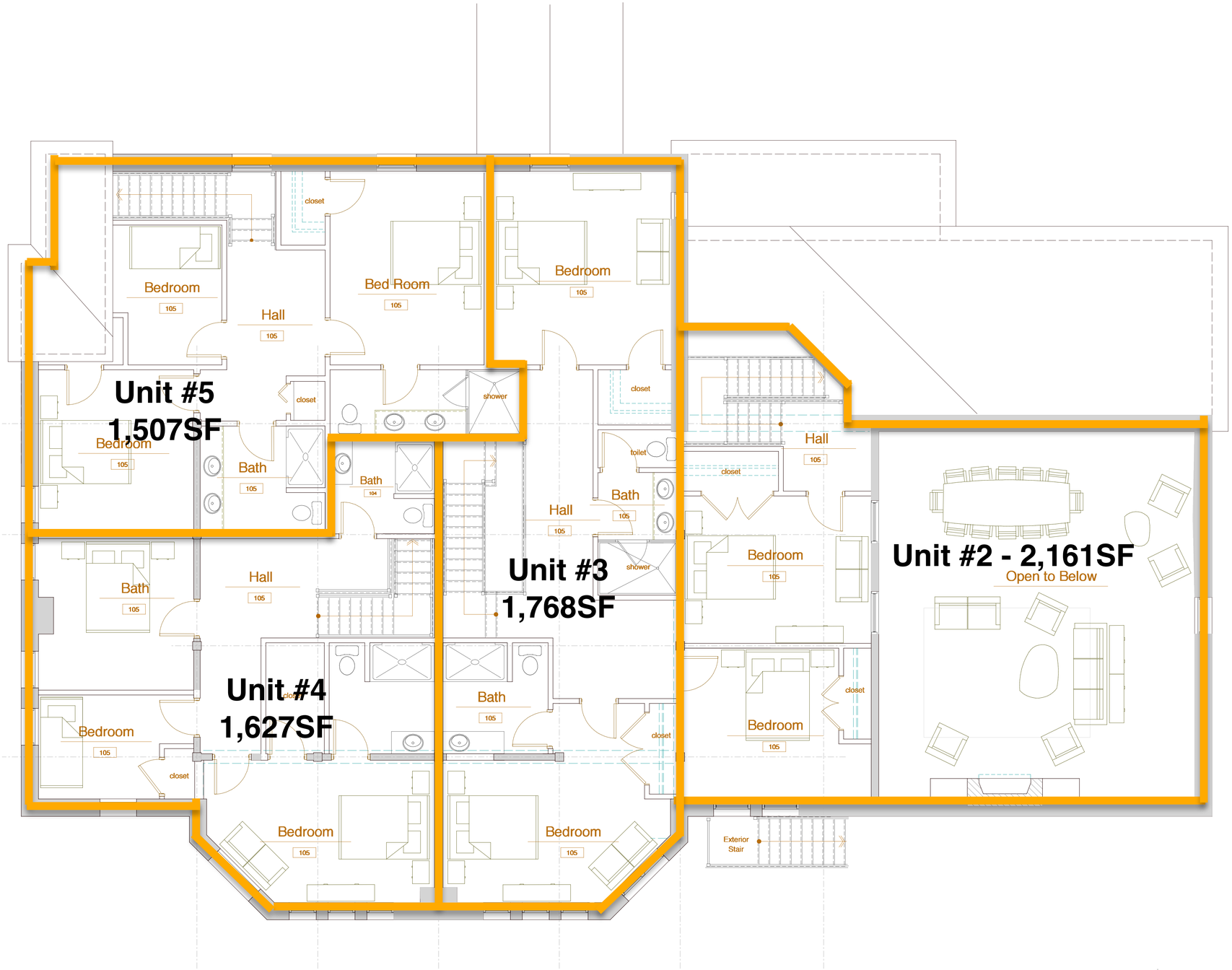
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portland, maine 04103
telephone 207 450 0750

e-mail matthewwinch@earthlink.net

Monsour Residences

32 Thomas Street
Portland, Maine

date	March 21, 2015
scale	1/4" = 1'-0"
project #	2011-018
drawing title	Second Floor Plan A102



Graphic Scale
0 2 6 12

GARRISON CONSULTING

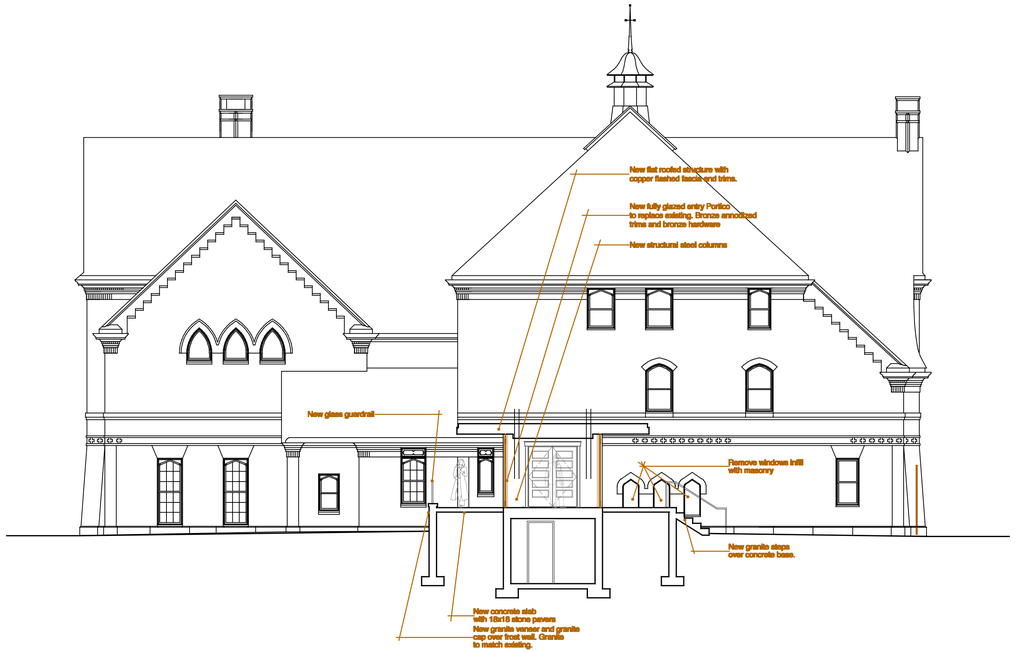
41 edgewood ave
portland, maine 04103
telephone 207 450 0750

e-mail matthewwinch@earthlink.net

Monsour Residences

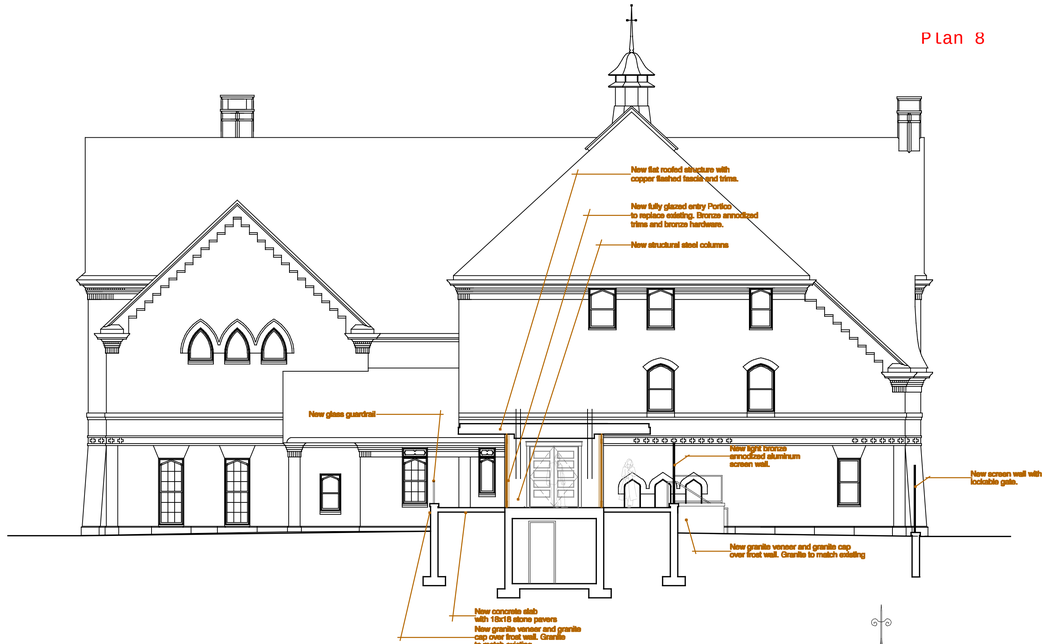
32 Thomas Street
Portland, Maine

date	March 21, 2015
scale	1/4" = 1'-0"
project #	2011-018
drawing title	Third Floor Plan A103



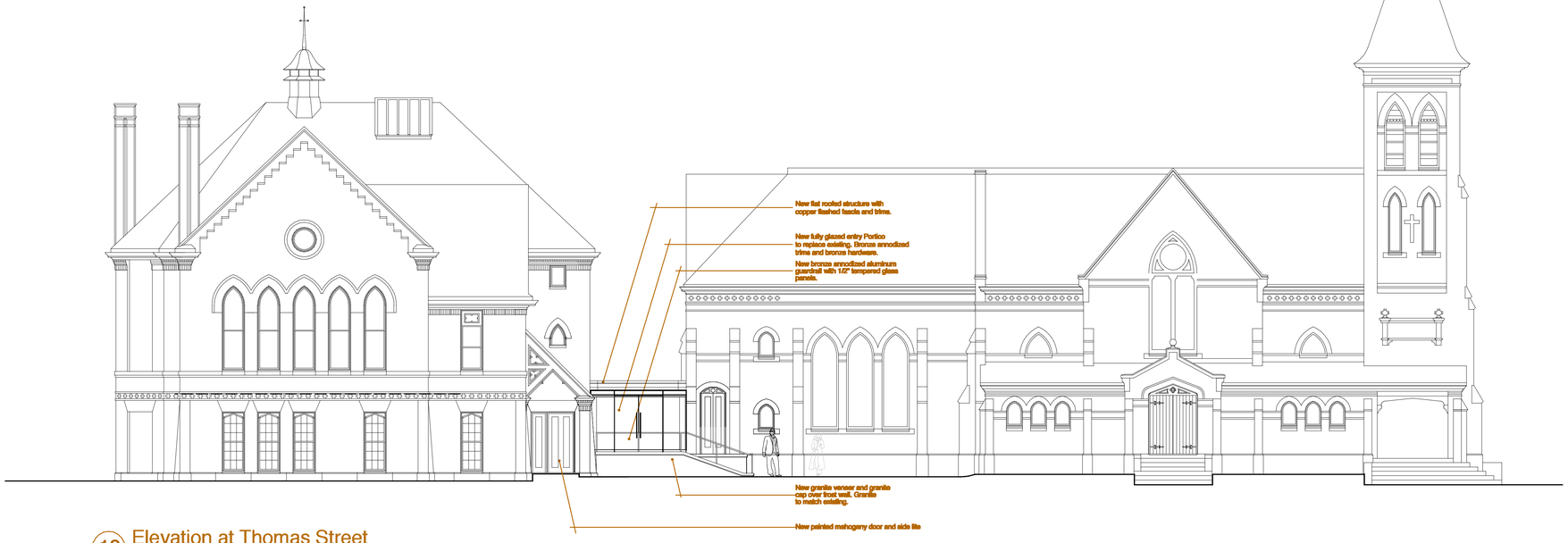
21 Section at New Vestibule

0 4 12 24



20 Section at New Vestibule

0 4 12 24



10 Elevation at Thomas Street

0 4 12 24

GARRISON CONSULTING
41 edgewood ave
portland, maine 04103
telephone 207 450 0750
e-mail matthewwinch@earthlink.net

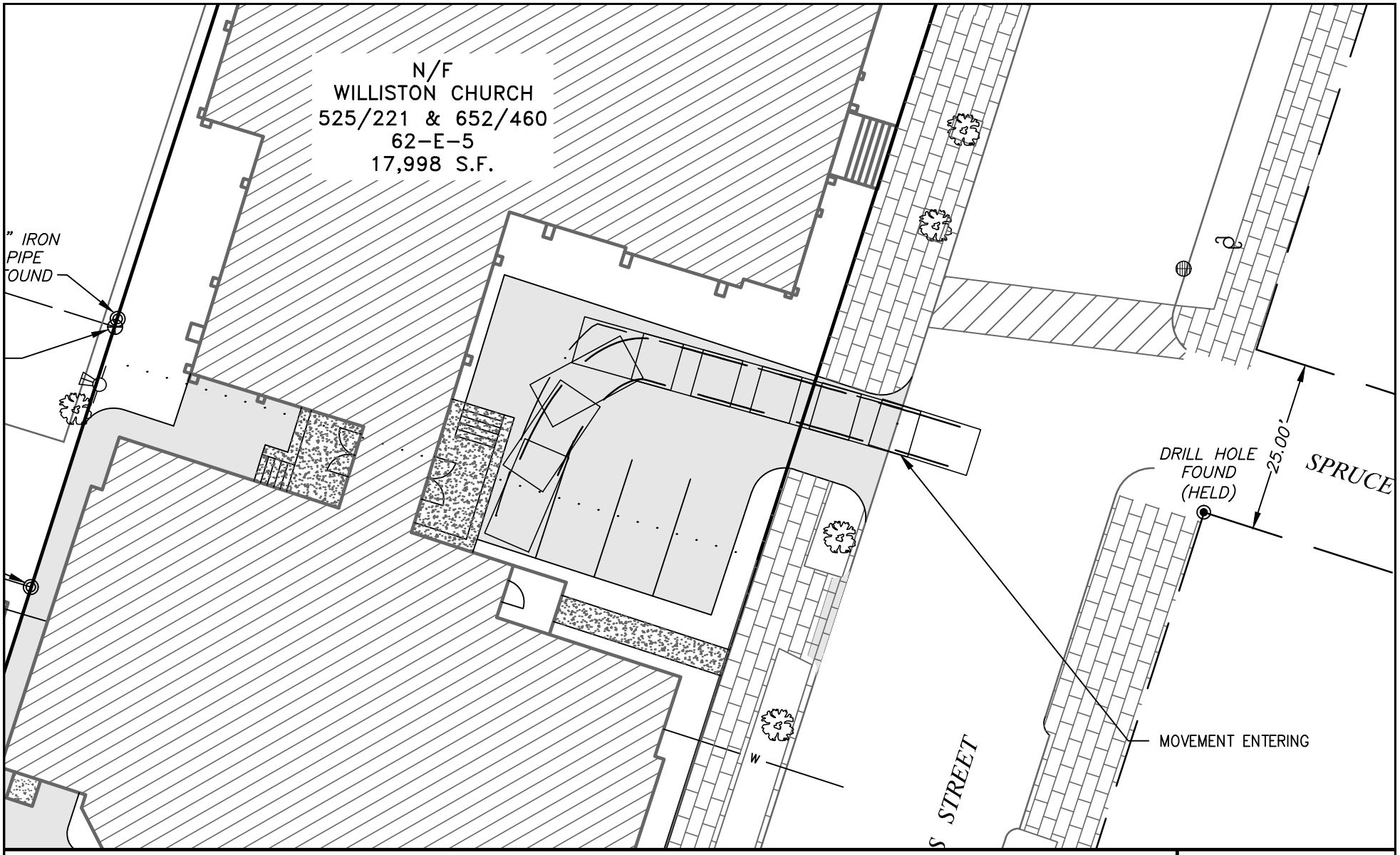
ORCUTT CONSULTING
ARCHITECTURE + PLANNING + LANDSCAPE ARCHITECTURE
PO Box 314
Kingfield, Maine 04947
telephone 207 939 66518
e-mail corcutt86@gmail.com

project name
32 Thomas Street Apartments

project location
32 Thomas Street
Portland Maine 04101

Revisions	date

date November 30, 2015
scale 1/8" = 1'-0"
project # 2011-018
drawing title Exterior Elevations & Building Sections
drawing number A301



TURNING TEMPLATES OF PROPERTY LOCATED ON

26 THOMAS STREET

PORTLAND, MAINE

PREPARED FOR

MAJELLA GLOBAL TECH

PORTLAND, MAINE

SGC

SGC ENGINEERING, LLC

- Civil Design & Survey Engineering
- Environmental & Regulatory Permitting
- Electrical Power Systems Engineering

SERVING OUR CLIENTS IN THE U.S.A. & CANADA

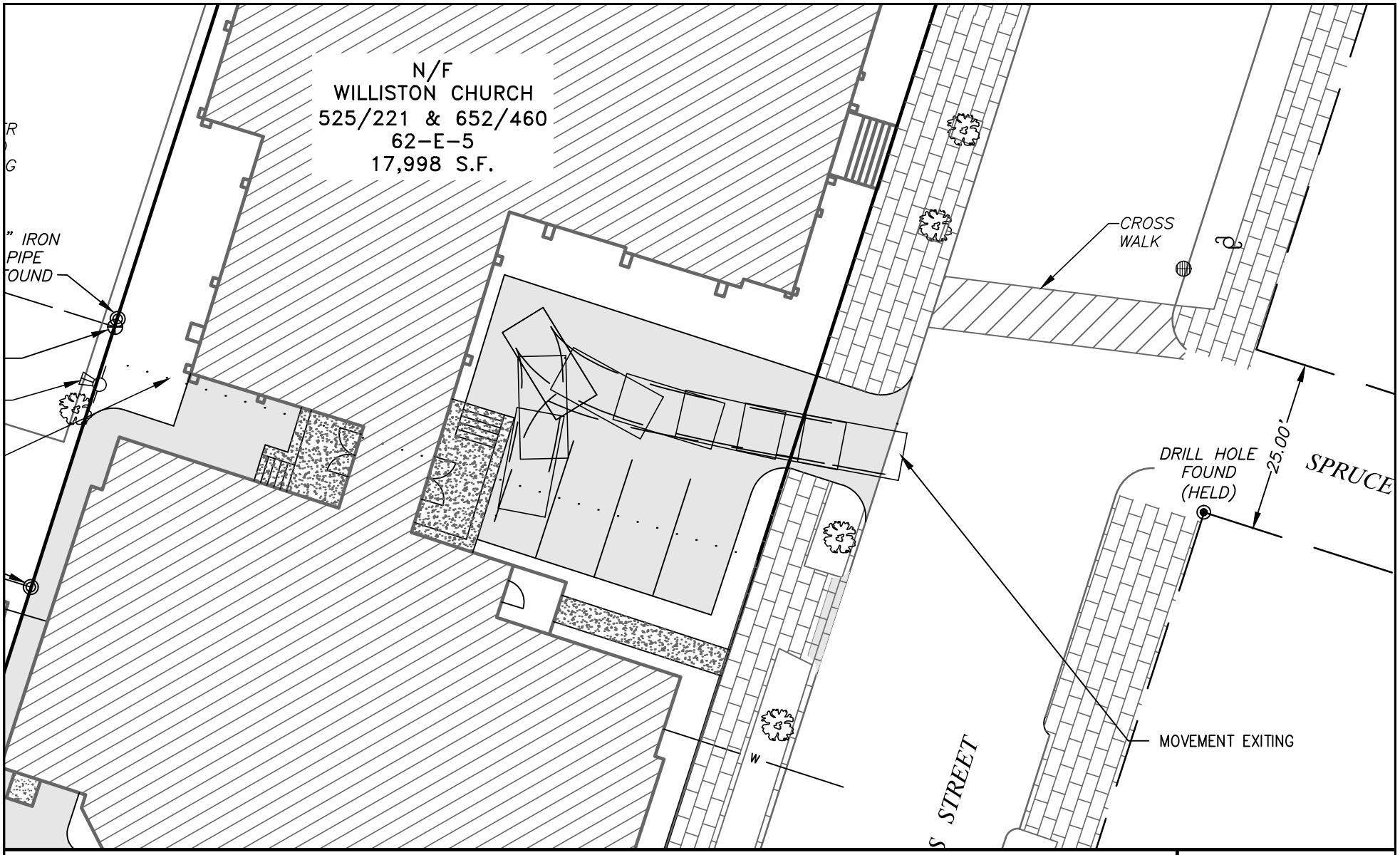
501 County Road
Westbrook, Maine 04092
Tel: 207-347-8100
Fax: 207-347-8101

40 Harlow Street, Suite 2
Bangor, Maine 04401
Tel: 207-217-6769
Fax: 207-217-6018

14 School Street, Suite 203-5
Bristol, VT 05443
Tel: 802-735-0258

Galleria Tower 1, Suite 2475
2700 Post Oak Boulevard
Houston, TX 77056

DATE: 09/23/15 SCALE: 1" = 20' DRAWN: TDD FILE: 1309001_Site Plan



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26 THOMAS STREET

PORTLAND, MAINE

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